Industrial Finishing

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Contents of this Issue

From the Editor's Window 5

Feature Articles—

Motor Car Colors at New York Show, by George D. Hirst, Inc. 9
Lacquer Applications in Furniture Finishing, by John H. Hamilton 14
Colors and Their Uses, by J. K. Cooper 21
Racks and Holders for Spray Finishing, by Donald A. Hampson 24
Uniforming Mixed Gum in Furniture Finishing, by J. M. 28
The Merchandising Value of Color, by Arthur J. Owen 32
Lacquer Primers for Metal, by Dr. S. P. Wilson 41
Eliminating the Drip from Lacquer Dipping, by L. B. Miller 48
Salvaging Part of What's Wasted, by F. W. Purdon 53
Mechanically Polishing Lacquered Automobiles, by K. N. Kathju 62
Sanding Before and Between Coats, by H. J. Milton 70

"Questions and Answers" Section 85

"Baked Finishing" Section 101

Finishing Refrigerators and Cabinets of Metal, by Fred Mannhardt 103
Conveyor Bearings in Baking Ovens, by D. A. Hampson 106
Buy Tested Materials and Avoid Trouble, by W. B. Fralick 108
Cleaning and Refinishing Galvanized Iron Containers, by D. A. H. 108
Brightening Coppered Coil Springs, by H. D. 110

Short Articles—

Rochester's Motor Car Show of 1929 12
Plastic Finish—Stipple Figuring. 16
Quality Lacquer Pays in End ... 26
Cheap Spray Booth Lining 30
Touching Up Sap Walnut With a Hi-Light Gun 35
Moving Large Refrigerators in Finishing Room 36
Spraying Fancy Turnings 47
Care of Spray Gun Hose 61
Additional Comments 69
Acid Proof Table Tops 74
The Finish Sells the Furniture. 77
Saves Spray Waste 81
Lacquer Over Old Finish 82

Editorial 112

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FROM THE EDITOR'S WINDOW

AS OPPORTUNITY year gets under way, evidence from various sources points to the fact that a number of newly developed and improved finishes are about ready to make their appearance in a big way. What is new in materials includes improved lacquer primers, new stains, fillers, sealers and thinners; also finishes that promise greater protection to surfaces covered, finishes that involve fewer coats and finishes which will produce new and striking decorative effects—some for wood and some for metal. Complete information about these new finishing materials and how to use them effectively and economically will appear in future issues of INDUSTRIAL FINISHING.

New developments and improvements in the mechanical equipment for use in industrial finishing operations and processes are also due to make their bow to the industry. These, too, will be described and illustrated in INDUSTRIAL FINISHING.

This timely information, together with feature articles, short articles, questions, answers and comments submitted by trained technical men and experienced practical men at work in various lines of modern finishing—all this material, presented briefly and clearly, will keep INDUSTRIAL FINISHING readers informed continuously about the things that are of greatest interest and value in the industrial finishing line.

W. H. Rohr

Managing Editor

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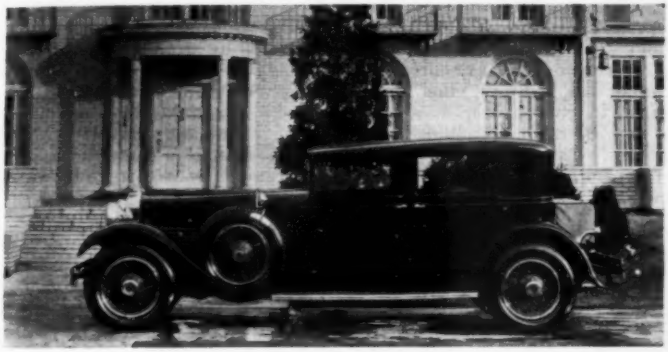


Motor Car Colors at New York Show

Notes on finishes and color decorative effects characteristic of 1929 models exhibited at the 29th National Automobile Show in New York City in January

By George D. Hirst, Inc.

ART, not so much science, marks the greatest advances in 1929 automobile design. Beauty is the keyword. Line or silhouette and color are important, but color has been subdued and restrained. The brilliant enthusiasms of previous years have been tempered by moderating influences. Garish tones are taboo. Such color families as blue, gray, slate and tans are popular. There is a decided leaning towards black, which while it shows dust, looks smart in contrast with chromium plating. Nickel plating, as an automobile finish for exposed metal, is relegated to the limbo of 1928. Chromium is almost impervious to rust and weather stains and is easier to keep polished.

At top of page, a Stutz Sport Sedan with custom body by Le Baron.

Cadillac; La Salle; Lincoln

Three Cadillac and two La Salle models are shown in the Grand Central Palace, with many more in the Hotel Astor and at the Uppercu Cadillac showrooms. At the Grand Palace, Cadillac has a five-passenger Imperial landau cabriolet, body by Fisher, in black with chrome-plated wheels. Also a four-passenger sport phaeton, body by Fisher, in polished aluminum and green.

La Salle shows a convertible two-passenger coupe; body by Fisher, in colors of blue moss and apple blossom. Also a five-passenger town sedan in green, and a seven-passenger Imperial in two shades of maroon, with silver leaf striping and chrome-plated wheels, both with same wheelbase, engine and make of body.

Visitors at the show see five representative Lincoln bodies mounted on the new chassis. All of the exterior trim is of chromium plating, applied over the nickel finish, to give greater durability. A new Berline by Judkins is on display. The lower body panels of the Berlines, the fenders, chassis and wheels, are painted with leather upholstery to match.

The Duesenberg convertible roadster, by Walter M. Murphy Co., is one of the outstanding designs. Body is in rich black, relieved by a narrow chromium plate body molding. Wheels, head lamps, radiator shell, bumpers and running board strips are also in chromium.

Packard De Luxe 8 Sport Phaeton. Body, wheels and bonnet in light gray; Chassis parts, body and bonnet moulding and louvre doors, diamond deep gray. Fine stripe on body, moulding and wheels diamond white.

Two sedan models by Peerless and a roadster are being shown. Finish is dustproof, weatherproof lacquer in a variety of colors, with all nickel parts in non-tarnishing chromium plate.

green-gray deep, while the upper portions and moldings are in sycamore green. The body has a striping of green. The wire wheels are gray-green. The town sedan has upper and lower body panels of burlwood brown and moldings of chestnut brown dark, with window reveals of bisque buff. The fenders and chassis are painted chestnut brown dark.

Packard; Duesenberg; Peerless

A practically unlimited choice of color and upholstery combinations is offered by Packard. A feature is the radiator fronts, which have been lacquered to match the color of the body. All external metal parts are chromium plated. The open cars are attractive. Packard has succeeded in endowing its cars with swank and spirit without painting them in garish colors or loading them with unnecessary trappings and gee gaws. The cars are finished tastefully in single tones of warm out-door brown, blues and grays,

Nash; G-Paige; Gardner

Color leads the list of the new Nash features, with 16 new blendings in practically every shade.

Graham-Paige model 837, the largest of the line, has special de luxe features of interior trim and equipment. Genuine walnut window and wainscoting panels, the latter having pewter inlays and special panels worked in the fabric on the doors, are among its effects.

The series numbers, "120", "125", and "130" refer to the wheelbase lengths of the cars by Gardner; the variety of the new offerings is indicated by the fact that in the three series there are 16 body styles and more than 50 color combinations! You can get your own favorite color without any trouble!

Reo; Erskine

Models on the new Reo included in the exhibit of the Reo Motor Co. are a standard sedan, painted in a light brown, and a sport coupe

painted in maroon and robin red. Other models of Reo Flying Cloud include: A sport sedan painted in bayberry green and trimmed in figured green broadcloth. The wheels are cream and the fenders black. A two-passenger sport coupe, the body painted in maroon and black, with a wicker belt. There are six wire wheels, the spares being carried in fender wells. The wheels are cream and the fenders black. A semi-sport brougham, painted in two tones of blue, dark blue below the belt and light blue above. The upholstery is of rich blue mohair. The five wire wheels are cream and the fenders black.

The appearance of the body lines of the Erskine is accentuated by a new molding treatment which flows in a curve from the windshield down to the lower corner of the hood. Emphasizing the low appearance of the bodies is a broad molding at the belt line, finished in colors that are contrasted to body lacquers.

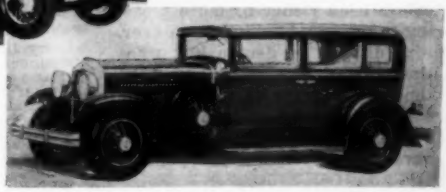
Chevrolet; Ford

All the new Chevrolet models are provided with a lustrous finish and each has its own color combination. The color combinations in the 1929 Chevrolet line are completely new. The convertible landau is finished in brown with gray belt and striped in orange. Window moldings are in gray and upholstery is in mohair. The coach is finished in gray with gray belt, and is striped in ivory. The window moldings are of gray and the upholstery is in blue corduroy.

The coupe is finished in blue with a blue belt. The stripe is in scarlet and the window mountings are in blue. The sedan is finished in green with green belt, ivory stripe and green window moldings. The upholstery is in green corduroy. The sport cabriolet is finished in blue with blue belt, ivory stripe and window moldings of blue. It is converted into a sport car by lowering the top. The two open models, the phaeton and the roadster, are of different color combinations.

The phaeton is finished in green with green belt, ivory stripe and green moldings. Gray is the dominant color note reflected in the roadster. This is set off by a gray belt, red stripe and gray mouldings. The top is easily lowered and a boot for the top is provided.

The Ford Town Sedan shown privately is of the three window, four-door type, and the body is longer than any of the passenger cars in the Ford line. The lines are long, low and straight, emphasized by the belt molding which starts at the radiator and encircles the body. The several color harmonies in which the car



Above: Reo Flying Cloud "Mate" Sport Sedan.

Right: Dodge Senior Sport Sedan.

Moon 6-92 Windsor White Prince Roadster in a steel gray color scheme.

is offered are given touches of brightness by the nickeled headlamps, radiator and door handles. All interior hardware—door handles, remote control handles and window lifts—are of scroll design and finished in bronze to correspond in color harmony with the trimming. The Station Wagon is longer, lower and roomier than any previous Ford of this type. The body is of natural wood finish.

Rochester's Motor Car Show of 1929

Magnificent splendor of decorative effects graced the opening of Rochester's 21st Annual Auto Show which opened on January 21 and continued through the 26th. Around a glittering background of the most gorgeous automobile creations ever presented to a waiting public, was woven a Spanish motiff with orange and black and blue as the dominant colors.

Color seems increasingly important, and never before have the colors been richer or more pleasing to the eye. Looking them over, it is difficult to decide just what tint, shade, tone or hue will be the most popular, for the show is a veritable rainbow of colors, all seemingly different. Two toned cars do not seem quite so popular as a year or so ago, but the combinations, when used, are invariably pleasing to the eye. Some of the cars have hood and cowl in a dark tone, and the body of the car in a lighter tint.

Subdued Colors

One thing that strikes the visitor is that color, if anything, shows an improvement over previous years. While colors are still brilliant, on the whole they seem somewhat more subdued, and fit more pleasingly into the picture, whether that be a city street or some beautiful woodland spot.

Then too, color harmony has been more carefully worked out and this makes the car of 1929 even more beautiful than ever before; many of the color combinations have been borrowed from nature itself, by the enterprising manufacturer.

Black fenders and aprons, once so popular, have been discarded in favor of colored surfaces that match the body. It is evident that close attention has been paid to striping in order to enhance the lines of the present day car. Body lines also have come in for much improvement. These improvements, together with the wonderful color effects, make the motor car of 1929 something that we will feel proud to possess.—Arthur J. Owen.

Berry Bros.' New Lacquer

Berry Brothers, Inc., Detroit, Mich. announces the development of a new airplane tested char lacquer for aviation use. The Berry Brothers Laboratory has submitted this char lacquer to many severe tests and now considers it particularly satisfactory for aviation requirements. It is called "517 Char."

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Sanding Sealer No. 1038 is a good quality, genuine pyroxylin lacquer. The reasons why it sells at such a low price are: 1, because we can make it on a mass production scale; 2, because we want a big volume of business. The first reason is explained by the fact that this product can be used on all types and grades of furniture. It is not like a finish coat lacquer which must be produced in limited quantities due to special requirements for gloss, body, color, etc. The second reason is a frank statement of fact.

Padding Zapon 1038

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The pad is made of tightly rolled, washed cheesecloth. It should be about 1½" thick and 7" long. The sealer is placed in a Mason jar to prevent evaporation. This sealer is padded by using the forward stroke only.

Send in for a free generous sample which will be shipped promptly from our nearest branch office. The coupon saves time and will save you money.

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Foreman Finisher calls attention to several different methods of using lacquer, including its use over shellac and under varnish; also thinning lacquer, sanding the lacquered surface and finally rubbing and polishing lacquered furniture

Lacquer Applications in Furniture Finishing

By John H. Hamilton

MANY MANUFACTURERS are using a thin coat of shellac as a first coater over the filler, before applying the final coats of lacquer. This coat of shellac fills the pores and depressions in the wood and furnishes a good foundation for subsequent coats of lacquer. It also protects the filler from the lacquer solvents, helps to keep the filler from shrinking, and eliminates the danger of bleaching or bleeding through.

Many lacquer manufacturers recommend that lacquer coats be used entirely over the filler, but I find it satisfactory to use a good first-class shellac, cut to the proper consistency to make a thin coat so as not to cause orange peel, and then follow this with the necessary lacquer coats. This will give a remarkably even and full-bodied finish.

Lacquer as an Undercoater

Some firms are using one or more coats of lacquer as undercoats, followed by one or more coats of varnish. This gives a beautiful finish when completed and saves considerable time in the drying of the undercoats, without sacrificing any of the body or beauty of the varnish finish. In spraying these lacquer undercoats, it is best to reduce the lacquer to the extent of about one quart reducer to each gallon of lacquer.

Some piano manufacturers are using three or more coats of lacquer to replace varnish for building up the surface coat of varnish; this coat is then rubbed and polished. A great deal of valuable time and space is saved by this method, and a highly satisfactory finish is obtained.

Where it is desired to reduce

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the lacquer, be sure to use a good lacquer reducer obtained from some reputable firm; do not, under any circumstance, use denatured alcohol, naphtha, or benzine. The two last named work contrary to nitrocellulose and will probably throw the material out of solution, causing it to become a thick mass. Alcohol will pull moisture from the atmosphere to itself and as this is an enemy of nitrocellulose, it may cause precipitation and produce a blush or gray film.

Lacquered Novelty Furniture

A lacquer finish is used by practically all manufacturers of breakfast-room furniture. One or more coats of a paint undercoat or enamel undercoat are generally used, and these undercoats should be allowed to dry overnight before succeeding coats are applied.

Any decorations, stripes, or antique effects should then be put on the work with japan colors of the shades desired. This coloring should be allowed at least five hours to dry, after which one or more coats of clear lacquer may be applied as desired. After the final coat has dried overnight, it can be rubbed with pumice and oil or water, and, if polishing is desirable, it can be polished with rottenstone, and oil, or with any regular polishing preparation.

It is well to remember that during cold weather the finishing room should be kept well heated at all times, to prevent the lacquer coats from becoming chilled, and to aid the lacquer in flowing out smoothly. A temperature of from 70 to 75-deg. F. should be maintained. Lacquer should never be applied at a temperature below 70-deg. F.

Plastic Finish—Stipple Figuring

Plastic finish is becoming very popular in all finishing fields. Plastic is used for wall decorations, furniture and novelties. It is very heavy in body, its consistency being about the same as soft putty. It is easy to apply and dries to a tough and durable film over night. When applied on wood or metal, a primer is desirable to give proper adhesion and satisfactory working qualities.

The plastic is applied either with a heavy bristle brush or a putty knife. The next operation —the formation of the characteristic raised stipple figure—is very important. Using a round stencil brush about 1-in. in diameter, the finisher places it perpendicular to the surface and rotates it to the right, lifting it as he does so. Then he places the brush (always keeping it perpendicular to the work) alongside the first mark, and rotates it to the left, raising it again as he does so.

This procedure continues until the entire surface is finished. The finish is allowed to dry over night or, for quick service, it may be baked if conditions permit for 1½ hours at 300-deg. F. When the finish is completely dry and hard, the finisher sands down the high sharp nibs, dusts off the surface and it is ready to be decorated with polychrome colors. He lets this finish dry for two or three hours and then smuts them with colors ground in japan or oil. The final result is a remarkably beautiful finish.—Jos. M. Verderosa.

President of Impervious Varnish Co., Dies

Charles Edward Pope, president of the Impervious Varnish Co., Pittsburgh, Pa. died Wednesday, Jan. 9, 1929.

Colors and Their Uses

Naming a number of different standard colors and explaining how to mix certain colors to obtain the desired tints, shades, tones and hues

By J. K. Cooper

IN ORDER to be able to mix colors and mix them without waste, one must have a knowledge of the colors and the tints, shades, tones and hues they will make when used. For instance, consider the reds that are commonly used: These include Venetian, Tuscan, Indian, and burnt sienna, and for the finer decorating and tinting work, we have American and English vermillion, crimson, scarlet, alizarine, permanent carmine and many others.

Each of these colors has a different tint when mixed with white. Some are never mixed with white but are used for glazing color over a ground coat. Some reds are blue in hue while others are yellow. To learn the hues of each color one should experiment with these by mixing until he gets the proper tint or shade fixed in his mind.

Venetian red is a dull color, but the most permanent of reds—Tuscan—is a similar color but of a brighter tone, and it is permanent to the sunlight when well made.

Indian red has a bluish hue. Vermillions are brilliant in color but not as permanent or nonfading as the other reds. Some vermillions have a yellowish cast. American vermillions are made from lead, while English and other vermillions are made from a copper base, and contain sulphur; they cannot be mixed with all kinds of materials. One of the most common stumbling blocks a mixer finds is the mixing of purple and violet.

Of course, red and blue ought to make purple, but which hue? Venetian red and Prussian blue mixed together make a dull mud color; Venentian red is too dull, while the blue has a greenish cast to it. When mixing purple, use a red with a bluish hue and a blue with a purple hue; such colors are crimson red and ultramarine blue. The same holds for mixing a bright and vivid green. A yellow with a greenish hue, like lemon yellow, and a blue with a greenish hue are the best, like Prussian.

For mixing orange, select a yellowish red and a reddish yellow such as medium chrome, and vermillion red or scarlet. Many other colors are ground in paste form with different binders. We have colors for outside work ground in linseed oil, glazing colors ground in oil, colors for automobiles and finer work ground in japan; and water stain with glue binder. These are called distemper. For water color work, another article will take up a list of colors of the various kinds menioned.

BLACKS

Coach	English blue
Ivory drop	Carbon black
Lamp black	Black iron oxide

GREENS

Chrome—light and medium
Forest—light, medium and dark

Bottle	Bronze
Olive	Emerald

BROWNS

Raw and burnt sienna
Raw and burnt umber
Brunswick brown
Vandyke brown

LAKES

Alizarine	Carmine
Crimson	Geranium
Green, light	Mauve
Orange	Rose
Olive	Green, dark
Blue	Scarlet

WHITES

Flake white (white lead)
Zinc white (zinc oxide)
Cremnitz white (white lead)

Glaze colors include a very different line of color. These are ground in oil and are transparent.

YELLOWS

Brown, pink	Italian pink
Indian yellow	Orange lake
Raw sienna	Royal golden lake

Yellow lake, light and deep

GREENS

Alizarine, light and deep	Malachite
Green lake, permanent	Emerald
Sap	Vert-Emerande
Blue green	Verdigris

BLUES

Cobalt	Ultramarine
Italian	Chinese
Verditer	Steel

REDS

Alizarine crimson	Crimson
Alizarine lake	Carmine, No. 40
Florentine lake	French carmine
Scarlet lake	Rose madder
Asphaltum	Vienna rose lake

Permanent vermillion, light and deep
Geranium lake, yellowish
Permanent turkey red
Geranium lake, bluish

Purple

Deep purple, royal purple, heliotrope, magenta: In the distemper colors are included the various colors heretofore mentioned in oil, which are used for water color decorating. The japan color has some shades which are never used, only in automobile and other such work, as for example, umber, black, and common colors of the previous list.

All of these can also be obtained in dry form in the artist colors. As in oil colors, there are many different tones other than mentioned before, such as madder lake, orange, vermillion, pink madder, Harrison red, light red, new blue, Antwerp blue, indigio gray tint, cobalt violet, Naples yellow and many others in addition to the standard colors.

We have taken up color before as to the hue, tint and shade. Now as to colors in everyday use, which are listed below according to their permanency:

NON-FADING

Raw sienna	Burnt sienna
Raw umber	Chromium oxide, green
Burnt umber	Ivory drop black
Indian red	Black oxide of iron
Toluidine red	Venetian red
Tuscan red	Vandyke brown
Cobalt blue	Yellow ochre
Carbon black	Vermillion

Ultramarine blue (except when used with white lead)

FAIRLY PERMANENT

Chrome green — light, medium and dark
Chrome yellow—light, medium and orange
Orange — Cadmium yellow
Para red (aniline)

In addition to these, colors in oil which are used and listed at various supply houses, are as follows:

REDS

Indian	Tuscan
Turkey	Venetian
Scarlet	Vermillion

Vermillion, unfading, permanent and English

BLUES

Chinese	Prussian
Cobalt	Ultramarine

YELLOWS

Orange chrome	Medium chrome
Yellow ochre	Golden ochre
Dutch pink	French yellow ochre

Light or canary chrome

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Opex Sanding Sealer and lacquer form a permanent bond

Because it unites *chemically* with lacquers, Opex Sanding Sealer is the ideal undercoater for lacquer wood finishes.

It replaces shellac and shellac substitutes that make the finishing lacquer brittle as well as cloudy. This Opex Sealer sands more easily—flows better. Due to large production it can be purchased at a price comparable to a good shellac.

This perfected sealer forms a permanent bond between new wood and the first coat . . . or between the filler and next coat if stains are used.

Thus it produces a tougher and more durable lacquer film. It gives richer depth and luster to the finish.

Naturally, such a product is now being followed by imitations, but these are similar only in name or purpose—not perfected. Unlike Opex Sanding Sealer—the original—these substitutes are milky in appearance, cover up the grain and are too quick drying to give a smooth film.

Opex finishes include a complete line of "quality" primers, surfacers for either wood, metal or composition products. Used with Opex lacquers, they assure a finish of unsurpassed beauty and life.

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Racks and Holders for Spray Finishing

Production engineer calls attention to some of the racks and holders that have been designed and placed in service in the spray room of a furniture factory

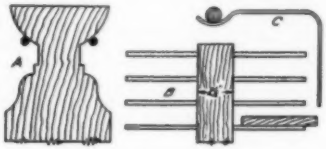
By Donald A. Hampson

A CONCERN manufacturing a medium grade of furniture has developed several interesting devices and methods for keeping down the cost of spray finishing. One feature, in particular, includes a considerable number and variety of holders for supporting material in process.

Three booths are located along one wall, each booth exhausting directly out from the back. The entire remaining space in a large room is given over to storage and trucking. As a result, ample room is available to swing work or trucks so that congestion—which often cuts down production—does not exist.

Everything smaller than arm chairs is put on trucks. Each of these trucks has a superstructure arranged to hold maximum quantities of the different units that are to be finished. Considerable ingenuity is displayed in the design of these holders in order that a few designs will take care of all the factory products. In this connection it may be stated as a truism, that the success or failure of a finishing process is as dependent upon the ingenuity of racking the parts, as upon any other single factor.

Referring to the accompanying drawing, the reference letter *A* shows the way in which some styles of ends are hung after spraying. A series of steel rods project from the framework built on the truck. These rods are ½-in. in diameter and may be spaced 6 or 8-in. apart on centers; in either case, they are adaptable to a variety of sizes and shapes. Not only single pieces but often whole pieces of furniture are hung from

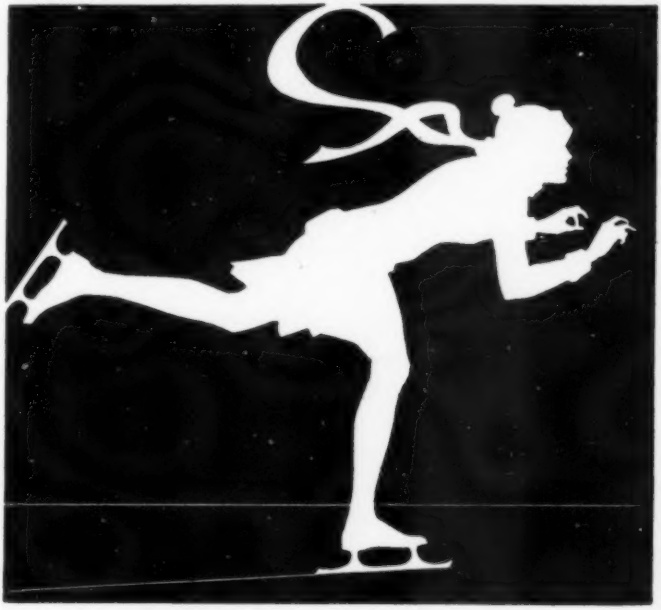


Illustrating three different methods of supporting parts of furniture while they are being sprayed, or while they are drying immediately after having been sprayed.

the rods. Of course, such whole units are limited to light models like taborets and stands.

Round rods present a minimum of surface to make contact with freshly coated articles and as a result they are used extensively in many racking schemes. The steel rod has advantages over the wood rod, in that it can be easily cleaned, it is stronger and it can be used in smaller diameters than wood.

In this factory, table tops are sprayed before the final assembly. For small tables and tables of the leaf variety, the type of rack



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shown at *B* is employed. These racks consist of substantial wood frames—skeleton in form—the vertical members of which are pierced at intervals for ⅜-in. steel rods. The tops are laid on these horizontal rods.

It is the company's policy to avoid extending the heights of racks to a point that would cause any inconvenience to the workmen. For example, on these racks for table tops, there is only 30-in. of vertical height involved; still, the workmen are able to get as many as 120 of the smaller tops on one of the truck racks.

Stands, chairs and tables are sprayed on the turntable. Smaller parts are handled separately, on other holders inside the booth. The part of the drawing marked *C* shows a light steel holder arranged to swing out from the inner sides of the booth. Holders of this type are useful for supporting furniture legs, spindles and other slender parts while they are being spray finished.

Quality Lacquer Pays in End

Recently I had the opportunity to examine several different makes and grades of lacquer. The experiment was extremely interesting because it showed particularly that manufacturers as a whole have their own ideas as to what constitutes a good lacquer.

It is my belief that in some cases the reputation of modern lacquer has been placed in an unfavorable light, due to the fact that certain manufacturers have been "making lacquers down to a price."

Furniture manufacturers are willing to pay for high grade lacquers if it can be proved to them that it will pay to use the higher-priced materials.

In the experiments, I found one furniture lacquer that was very low in price but the manufacturer claimed that it was a good product. Investigation confirmed the first guess, that while it was a lacquer because it contained some cotton, it was constructed at a cost as low as the manufacturer dared to go.

Another product investigated contained about four times as much film-forming materials (solids) as the cheap product, therefore when it was sprayed it would cover more than twice as much surface per gallon as the cheaper material.

The price per gallon was not quite as much as the cheaper grade. In addition to this, the high grade material will outwear the cheaper product, it will level out nicer when spraying and will never blush in moist weather.

Experience proves time and time again that it pays to use high-quality lacquers on medium and high grade goods and that in the long run the better materials are usually cheaper per unit.—C. J. Steinhart.

Robert Rauh, Inc. Increases Production Facilities

Robert Rauh, Inc. (distillers and refiners of resinous products), 480 Frelinghuysen Ave., Newark, N. J., announces that "we have just completed installations for an additional 1,000,000-lbs. capacity for the production of ester gum."

R. A. Plumb is New Clean-Up, Paint-Up Chairman

Dr. R. A. Plumb, General Director of the Truscon Laboratories, Detroit, is the new Chairman of the National Clean-Up and Paint-Up Campaign Committee. Dr. Plumb has accepted this important post at the request of President Charles J. Casper of the National Paint, Oil and Varnish Association, Inc.

On Radio Cabinets!

THE World's Largest Manufacturer of electrical equipment had a working sample of Sandseal early in December. Four weeks later they wired in an order for a large shipment!

America's largest users of wood finishes are beginning to employ this extraordinary product, along with Sunstand Stain, in their finishing schedule.

Marietta Paint & Color Company

MARIETTA, O., COLUMBUS, O., HIGH POINT, N. C.

USE COUPON

Marietta Paint & Color Company
Marietta, Ohio.

Gentlemen:
We would be glad to try a five (5) gallon can of Sandseal at the drum price.

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Uniforming Mixed Gum in Furniture Finishing

Foreman Finisher in furniture factory explains how to finish furniture that is built up of mixed gum to produce an equalized, uniform, rich walnut color, or whatever tone is desired

By J. M.

IN MANY woodworking factories gum wood has taken its place among the higher-priced and more substantial hardwoods, and for some time it has been the predominant substitute for walnut and mahogany. In fact, in the better grades of furniture we see the use of gum for posts and wherever a piece can be used so it is not too conspicuous; it is, of course, suitably harmonized as to color and effect, thereby saving considerable in the cost of lumber.

In the cheaper and medium grades of furniture, such as radio cabinets, music cabinets, dining room and bedroom suites, etc., gum is often employed almost entirely.

I have had experience wherein these gum cases would come to the finishing room, and they consisted of red gum, sap gum and tupelo all glued up together, but the finished job had to be absolutely uniform in color.

With the present competitive conditions and production requirements, water stains for these articles are both slow and expensive.

I tried the various makes and kinds of pigmented oil stains, but these would not carry our color dark enough; also, I tried other prepared stains, but they too proved unsatisfactory. Needless to say, all of this covered a considerable length of valuable time and much "head-scratching." Finally the following method was adopted:

Combination Filler-Stain

The cases are given a careful inspection for checks, dents and similar defects characteristic of gum wood. In preparation for this inspection, the surfaces are cleaned by blowing them off with compressed air, or dipping them in a light oil stain, thereby removing all surface dust and any dust that might be packed in by belt sanding or handblock sanding in the cabinet room. The surfaces are given an application of dark combination filler and stain* (lacquer proof), then "ragged off" the same as any other filler.

Shading or Blending

This leaves some of the red gum a nice walnut color, but the sap remains very light; in fact, at this stage, the cases have a very striped and splotchy appear-

*We receive the filler from the manufacturer in the customary paste form, with the colors or dyes ground right in, therefore "combination filler and stain." Then we take, let's say, 5-lbs. of this paste filler to one gallon of benzine or gasoline, mixing thoroughly as a thin paint. This is termed by most finisher's as a 5-lb. cut.

It is well to state though, that filler is used on gum and other non-porous woods only to obtain color, or stop the suction of the wood, thus aiding succeeding applications. For all open-grained or so-called "hungry woods," a 10 or 12-lb. cut is required to fill up the pores.

W-Seal Brevolite -

dries in less than 20 minutes

A modern requirement—prevents bleeding of filler and stain--lays the grain to minimize sanding operation--dries quickly for sanding and recoating in one-half hour. A five-gallon trial order will demonstrate W-Seal as an essential material to lacquer finishing—at the drum price of $1.75 per gallon. Sprayed as it comes from the drum.

W-Surfacer . .

fills in one coat

BREVOLITE *Lacquers and Lacquer Enamels*

It fills in one coat--works rapidly and sands easily. For use under lacquer enamel finish on wood or composition. Lacquer enamels, brushed or sprayed over one sanded coat of W-Surfacer, give a smooth and presentable job. Try it—you'll find that it fills the need. Should be reduced with equal part of thinner for spraying.

WAUKEGAN CHEMICAL COMPANY

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Waukegan Illinois

BREVOKRAK *Krakles*

Offer a wide range of beautiful color combinations which greatly enhance the appearance of radio cabinets, furniture, fixtures, novelties, toys, etc. Ask for full details about "The Brevokrak System" of finishing—full particulars gladly sent.

ance. After an overnight drying it is up to the spray man; he uses a very thin spirit shading or blending stain (which is made by using a good grade of prepared red colors); then, by properly controlling the spray gun and air pressure, he touches up all the light places, and blends the color off into the more acceptable areas so that the whole effect appears natural and pleasing to the eye. This work is done before noon of the day, then the first coat of lacquer—or a good grade of substitute shellac—is to be put on. Then follows overnight drying again, the next day a light sanding to cut down the nibs. The final coat of gloss lacquer gives excellent results, with just a little wiping off with rubbing oil.

The result is a beautiful dark walnut finish which, contrary to general belief, appears rather clear and has considerable depth. This has proved to be not only an economical finish, but it leads to several advantages—as in case of a rush order, the three operations at the spray can all be performed on the same day. Then, too, any high-lighting or shading can be done in the so-called "blending operation."

Where lighter toned finishes are required, a transparent filler may be employed and the blending or penetrating stain can be applied to produce the desired shade. I have had equally good results when sanding over the filler, before taking the article into the spray booth. The advisability and probable success of doing this depends upon the working conditions and the atmospheric dust and dirt.

Clean shop conditions should start with the beginning of all finishing work.

Cheap Spray Booth Lining

In a certain plant where grease had always been used to coat the insides of spray booths, the management got the idea that this grease was costing too much. Accordingly a much cheaper grade of grease was purchased—in fact, the cheapest that could be obtained—with the hope that a substantial saving could be made.

The following Saturday the sprayman cleaned his booth and started to apply the new grease, but it happened that the day was rather cool and he found the grease was so thick and heavy as to be almost unworkable. In order to soften it and make it workable, he placed the can of grease on a heater and warmed it.

After several such experiences, this sprayman decided to find a way to coat the interior of the booth with less expense and trouble. Accordingly, when he had the booth thoroughly cleaned again, he took sheets of wrapping paper and coated the edges with old thick lacquer from the can into which waste lacquer is poured. Then he swabbed the edges of the booth with a brush coated with this waste lacquer and stuck the paper to the top, sides and bottom of the booth. It worked perfectly and effected a real saving of time, energy and temper. The cost for booth liner was reduced to a few sheets of paper.—Platt.

V. J. Dolan & Co., Complete New Offices

V. J. Dolan & Co. (wood finishing supplies), 1830 N. Laramie Ave., Chicago, announces the occupancy of new office quarters at the company's present address. The new office quarters represent the first step of a building program that will provide additional factory space.

QUICK-SEAL

The foundation finish for lacquer and other finishes

Dries in thirty minutes

DO NOT BREAK THE SEAL

By Sanding

QUICK-SEAL.

Does not require sanding

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THE MERCHANDISING VALUE OF COLOR

Where and why color appears today on so many articles of utility, and how it is being employed to stimulate sales in a great variety of products

By Arthur J. Owen

A FEW YEARS ago color was used merely for display purposes and show but today the value of color as a merchandising idea, is responsible for two sales being made where there was but one yesterday. Color today is to be found dominating every thing from the hot-water heating boiler in the cellar to the new air-mail envelopes recently put out by Uncle Sam.

It's not so long ago that the kitchen range was finished entirely in black; then came white enamel, then colors. Take for instance the old black camera of yesterday; now it is radiant in a wealth of colors. Yes, color's the vogue. Even the old wooden-handle knives now come in delicate pinks, blues and greens—things of beauty, all of them.

Cameras; Show Windows

The use of color in such products comes as a result of the demand for the stressing of style elements in color. Just try selling a black camera to some one who already owns one. Introduce the color change and note the awakened interest. Any article that has blossomed forth in color, will command renewed interest; the change from conventional blacks and whites to something brighter is bound to increase the sale of many products.

Anything that cheers up the interior of the home has a powerful appeal to the housewife; and she is usually the deciding factor in almost every purchase that goes into the home.

Color in the show windows or the showrooms never fails to attract the feminine eye, especially when there is displayed the highest degree of that elusive quality known as color harmony.

Plumbing Fixtures

Perhaps no class of manufacturers are stressing the vogue for color more than the makers of plumbing and heating fixtures. On a recent visit to a certain plumber's showroom, I witnessed a display of color that one would never expect to find in articles of this sort. Here I saw plumbing fixtures in a wide range of colors including Copenhagen blue, Clair de Line blue, Ming green, St. Porchaire brown, Orchid of Vincennes, Ionian black, Rose du Barry, Tan'g red, Ivoroire de Medici and Meissen white.

There was a full range of colors from the delicate tints of orchid to a hue as deep as ultramarine blue. Here was color in plumbing fixtures with distinctive character, lacking the grayness of ordinary color tones. Colors full of life, positive, with depth and purity. The use of color will have a strong effect from the standpoint of merchandising on visitors to this show room.

Typewriters; Radiator Covers

Go to your typewriter store. What attracts your immediate attention? Typewriters in color, of course; some in delicate shell pink, some in blues, others in apple green, each with its appeal to the present day generation of school and college students. Ask the owner of such a store the effect of color on sales. His answer will again affirm the merchandising value of color, as a means of increasing sales.

No one was particularly interested in enclosures for the hot water or steam radiators; their dullness did not appeal to the finer senses. But when a Utica, N. Y., manufacturer making this product dressed them up in colors to harmonize with the color scheme of the modern home, the effect on sales was remarkable. Color more than trebled his sales.

It's the Style

The manufacturer of today, who expects to hold his trade—and what's more increase the sale of his commodity—should give careful attention to color. The day of the plain blacks and whites are gone by the board. But color, like fire, is a dangerous thing in the hands of the novice. Careful study and attention to the smallest details are required, if one is to turn out a product that will fit into the general scheme of things in these modern homes of color, for above all we must avoid gaudiness.

Touching Up Sap Walnut With a Hi-Light Gun

One of the problems of the finishing room is to obtain a uniform walnut finish. When the walnut is not selected we get quite a lot of sap and light, streaky wood which, if not retouched, leaves an unsightly finish.

A manufacturer of wood products often buys walnut lumber or dimension stock that has been steamed. This steaming has a tendency to change the sap and, when a natural walnut finish is desired, this steamed sap wood takes on a reddish coat and shows up slightly darker than the remainder of the wood.

There are on the market, a number of sap stains for retouching the sap wood before the finish is started, but sometimes quite a few places are missed. This method of retouching requires an extra handling and calls for quite a bit of careful work.

One of the easiest and quickest methods of retouching sapwood to equalize its color with the heartwood, is to shoot on the stain with a shading or hi-light gun. The finisher can take a piece of walnut and blend the sapwood to match the heartwood perfectly.

For a natural walnut finish, fill the surface with a light brown filler, and allow it to stand over night. Then coat with clear lacquer primer or white shellac. After drying, sand smooth. You now have the wood ready for the final finish, but suppose you see a big sap streak—a place that's been missed! Mix materials according to following formula:

Black lacquer enamel	½-gal.
Cardinal-red lacquer enamel	8 fl. oz.
Clear lacquer	1½-gal.
Thinner, high grade	1½-gal.

This "sounds rather dark", but when sprayed on it is "nearly natural". The more you go over the surface, the darker it gets.

Now take your shading gun, fill the small cup and adjust gun for 30-lb. pressure. Shade the sap streak to match the rest of the

walnut. You can also shade out other light spots.

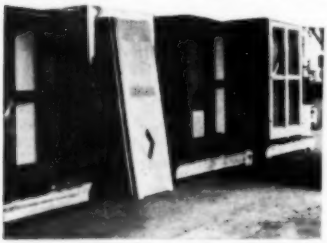
Then I come right back with my lacquer finish, because the shading is so light that it blends right in with the lacquer going over it. This, you see, requires one handling for touching up the sapwood and applying the first coat of lacquer. Repeat with the second and third coats of lacquer and then rub or polish. It will not rub out unless you rub clear to the wood.

This formula can be used for several shades of walnut. You will find it a good shading stain to use on birch or other woods that are finished in walnut—as on gum or beach.—E. T. Miller.

Moving Large Refrigerators in Finishing Room

Commercial refrigerators are so bulky and heavy they are really awkward units to handle; one of them is beyond the capacity of two men and it doesn't present any good grip for crane handling.

At the Lorillard Refrigerator Co.'s plant, in Kingston, N. Y., the management has adopted the lift truck and its platform as the means of handling these large units. Some of the units weigh tons and may require two trucks to move them, with platforms set in tandem for storing.



Some of the heavy refrigerators on platforms ready to be moved by lift trucks to spray booths.

The refrigerator is put on a platform as soon as it is assembled; then it goes to the finishing room. Here filler coats are brushed on and the rubbing is done—all while the refrigerator rests on the portable platform. When it is desired to move the unit, a lift truck is brought into service to do the trick. After the filling operation, the job is run into one of the big spray booths for the gloss coats.

The accompanying illustration shows some of the refrigerators on platforms, waiting their turn to enter the spray booths. Hardware is applied after the final finish coats are on. Most refrigerators continue to be finished natural, with oak the predominating wood. The landslide to color, found in most lines, has not hit this business, although gray finishes are used to some extent. Both mahogany and walnut are also used.

Some managers argue that it is poor practice to tie up a lot of skids in this way. To meet this point, one has only to ask how much time and labor can be saved for the price of a year's interest on a $5.00 platform. If a skilled finisher can be kept more steadily employed at productive work by the use of portable platforms, that interest quickly fades to insignificance—A. H. Donaldson.

DuPont's New Retouching Finish

The Chemical Products Division of the E. I. Du Pont de Nemours & Co., has added to its No. 7 line, a material called "No. 7 Touch-up Black." It is especially suitable for touching-up worn spots, scratches and other damaged places in black baked enamel and lacquer finishes, and can be applied directly to the metal. It is claimed that this material dries dust free in from one to two hours and gives a hard lusterous finish. It is designed for brushing, but may also be used with a spray gun.

LACQUER PRIMERS FOR METAL

Lacquer expert calls attention to the problems of making lacquer stick to metal and reveals specific information about primers of the oil-base and lacquer-base type; also primers that are baked on, and combination systems of priming.

By Dr. S. P. Wilson

BEFORE the use of lacquer enamels as finishing materials for such articles as automobiles, office furniture and other heavy metal objects subject to considerable wear and tear, the question of priming the surface of the metal was comparatively unimportant. Formerly, the metal surfaces on which lacquer was applied were generally small brass and copper articles, to which lacquer adhered well enough without much care other than conscientious cleaning. The lacquers used were generally high in gum and oil and the finished articles were not subjected, as a rule, to any severe service.

For Large Surfaces

With the problem of coating large steel and aluminum surfaces to solve, the choice of a primer became very important. By far the most widely used primer is an oil varnish, into which such pigments as oxides of iron have been ground. The pigment serves both as a rust inhibitive for iron or steel, and as an aid to the sprayer in noting that the surface is completely coated. This type of primer requires, to give its best results, several hours baking at from 150 to 250 degrees F., the time depending on the particular formulation.

Similar materials are available that air-dry in about 12 hours, under favorable conditions, but these not only require more time but are not as durable and are subject to wide variations in results, unless temperature and humidity conditions in the finishing room are kept constant. It is still the writer's belief that a high-grade oil primer, properly baked on clean metal, is the best undercoat for lacquer enamels.

On the other hand, there are many articles where baking is impossible, either because of limited space or fire hazard, or because of the low melting point of the metal used, or the effect of heat on its temper; in these and many other cases a lacquer primer, by which is meant a rapidly air-drying primer, of satisfactory durability is required. Many have been put on the market, but only a few have shown sufficient merit to survive. The best, however, compare favorably with the best baked-on primers, with a marked advantage in time, labor and handling charges.

Use Pigmented Primer

A good lacquer primer should be pigmented, although clear primers are offered and used successfully in some cases. The pigment indicates to the sprayer how he

is applying the primer and it permits of a thin even coat being applied. Primer coats should be thin, by the way, to give the maximum adhesion to the surface.

Another reason for pigmenting the lacquer is the fact (probably not generally known) that certain pigments and combinations of pigments actually assist in helping the primer coat cling tightly to the metal—possibly by neutralizing the oriented electric charge usually existing at the surface. A poor choice of pigments, on the other hand, will spoil a good vehicle, and really this is responsible for many puzzling failures of lacquer primers.

The vehicle for lacquer primers must naturally be as adhesive as possible. Pyroxylin itself, has little tendency to adhere to metal; really, it is due to the proper choice and compounding of the oils, resins, pigments and plasticisers that the adhesion is made possible and effective.

In these primers, the function of the pyroxylin is primarily to speed up the drying time, which is almost always appreciably longer for lacquer primers than for lacquer enamels. This is due not only to the greater proportion of oils and plasticisers, but also to the fact that slower drying solvents seem to assist in aiding the anchorage of the film to the metal.

Good lacquer primers require an hour or two before recoating, particularly if a pyroxylin surfacer is used over the primer. Unless sufficient drying time is given, these surfacers are apt to bridge over sharp corners.

Under White Lacquers

For use under white lacquers, there are available very good lacquer primers of a light blue tint. Since most white lacquers—especially the gloss white enamels—have a tendency toward slight yellowish or cream tints, the light blue background seems to be helpful toward correcting this to what is more nearly accepted as a pure white color.

Although most white lacquers are applied to metal over a baked white oil-primer, the well known difficulties in handling this type of first coater would indicate that a really durable lacquer primer for white should have a wide field before it.

Wood Ground Colors

Since these primers can be made, within certain limits, to give satisfactory oak, walnut and mahogany ground colors, another field is open where they may replace the baked-on ground coats now commonly used as backgrounds for the graining processes, which are popular for so many articles. It is important here that the primer be so formulated as to hold the graining ink without allowing it to slip or slide, and to withstand the baking of the ink, which may be done at a temperature as high as 180-deg. F. Unless the best plasticisers are used, this heat may "brittlize" the primer and make it practically worthless.

It may be said confidently that lacquer primers are now available which, when properly applied, give results as good as oil primers on a wide variety of metals. They will stand dinging, bending and general rough handling and will often adhere successfully to surfaces where baking is impossible. Their particular appeal, of course, is to the manufacturer who is not equipped to bake but there are manifold pos-

(Continued on page 47)

(Continued from page 42)

sibilities in securing better production with adequate quality in the plants of those now using baked first coats.

A Composite System

A composite system, occasionally used, employs as a first coat on steel, a thin coat of clear long-oil varnish baked on at 400-deg. F. for one hour, followed by a lacquer ground coat. The clear varnish is made to withstand the high heat and it gives a suitable result in less than one half the time required at the usual temperatures. However, it requires ovens capable of reaching this high temperature, and these cannot be heated by steam. Electric or gas furnaces are required.

Spraying Fancy Turnings

Recently a very fine tea wagon was brought into my repairing and refinishing shop. The wagon was practically new, nicely painted and attractively decorated. But there was one thing that placed this article in the class with cheap goods, and very few people would have accepted it upon delivery. The turned legs were very fancy in profile and when viewed from a short distance away, the undersides of all the beads and other fancy members in the turnings showed white. They had been sprayed from only one direction and, as a result, many parts received no finish. This should never have passed the inspector.

Any article with fancy turned legs should be turned upside down and sprayed before spraying any other part. The spray operator should have several felt covered sticks large enough to fit his revolving table; then, by putting these on his table and placing the article on these strips he can prevent the top of the article from being marred when it is placed upside down. By doing this, the legs can be easily reached and no white wood will ever show after the finishing is completed.

A slighted finishing job is a discredit to the finisher, the inspector and the firms that manufacture and sell the article. The people who bought that tea wagon paid a good price for it to an out-of-town dealer, and, in their hurry to complete the furnishing of a country home, the condition of this tea wagon was overlooked. Later, when the discovery was made, rather than bother with shipping the article back and securing an adjustment, the people sent it to my shop for refinishing. This ought to be a lesson for others. We should all strive to do better finishing. Let us spray the undersides of table leaves too, as these look rather unfinished unless they are coated all over. These things seem small but they should never be overlooked.—J. K. Cooper.

Milburn Sales Companies Incorporated

The Milburn Sales Corp., and the Milburn Paint Spray Corp., were incorporated on Dec. 31, 1928, under the laws of the State of Maryland, to carry on the sale of a number of the products manufactured by the Alexander Milburn Co., Baltimore, Md.

Milburn Sales Corp. takes over the selling of all equipment manufactured by The Alexander Milburn Co., with the exception of the paint spray equipment and air guns for greasing purposes. The sale of these is being exclusively taken over by Milburn Paint Spray Corp.

The officers of the Milburn Sales Corp. are: Alexander F. Jenkins, President and Treasurer; Edward P. Boyer, Vice-President; Louis J. Herzog, Secretary.

The officers of Milburn Paint Spray Corp. are the same as the above with the exception that Robert M. Zimmerman has been named Secretary.

Eliminating the Drip from Lacquer Dipping

Revealing some of the interesting "fine points" that characterize success in the process of dip-finishing small articles in lacquer by machine

By L. B. Miller

THERE ARE several methods of dipping lacquer enamels, but in this article I shall endeavor to explain how the best results may be obtained by using the open-tank method, with reference to wooden pieces.

The lacquer enamel used, needless to say, has an important effect upon the operation and finish obtained. Where a heavy coat is desired in either one or two coat dip work, with little or no grain showing through (commonly called shrinkage), the lacquer enamel must be heavy in body and the dipped articles must not be set up too quickly or allowed to flow too long.

If the finish dries too quickly, a scum may appear on the surface, or wrinkles will remain, making it impossible to "even out" the drip later on. Or, on the other hand, in flowing too long, too much material will run off the surface and the grain will show through, or shrinkage will occur. What is desired is to have a lacquer enamel high in total solids—including nitro-cellulose, gum, oil, and plasticizer—which will leave a heavy coating on the article dipped. Today, there are several brands of just this type of lacquer enamel on the market; they leave a heavy film on the work and dry with a good luster.

However, a thin clear lacquer, dipped over these enamels, is highly recommended in order to increase the luster, as well as to keep same from becoming soiled in handling and assembling.

The best results are obtained through the use of a dipping machine, but satisfactory results can also be obtained by hand dipping.

For dipping small articles by machine, the pieces to be dipped should be racked on a board (a holder) that has a projecting dove-tailed tongue extending along its full length, down the center of the back. This dove-tailed tongue is made to fit into the end of a vertical arm on the dipping machine.* When the holder or rack is lifted from the dip tank and removed from the machine it is the practice in some establishments to immediately reverse the holder and place it in one of the slots of a revolving drum. In this revolving operation, the drip which always appears on the lower end of the dipped article *is pulled back on the surface where it levels out and becomes indiscernible.*

It is impossible to state definitely just what the rate of withdrawal from the lacquer enamel should be, but good results are usually obtained at the rate of about ½-in. per minute. The revolving drum recommended for this purpose should be about 5-ft. in diameter and it should turn approximately 8-r.p.m.

*See page 59, Sept. issue.

Salvaging Part of What's Wasted

Foreman Finisher calls attention to what materials and supplies are wasted excessively in some finishing rooms, and suggests methods of reclaiming a considerable percentage of this waste

By F. W. Purdon

WASTE is a disease, the culture or germ of which multiplies very rapidly when it is placed in the proper environment, namely, carelessness. It is a disease which will eat as a canker the very heart and vitality from any factory where the germ is allowed to spread. I wonder if you have ever looked upon the subject from this angle.

Non-eliminated waste has written the epitaph for many people, factories and empires. Are you interested in waste as a foreman or manufacturer? If not, be careful that you or your factory does not become inoculated with the germ and reach the stage pronounced, "incurable." Visualize, if you can, a picture of our great national forest 100 years ago. Now, see what remains of it today. Look up the statistics and see what small percentage of the timber actually cut reaches the finished product. The waste in the lumber industry has been something enormous.

Again, take the meat packing industry—a shining example of the elimination of waste. As you know, every part of the pig is utilized, except the squeal, and that has been sold to one of our leading automobile manufacturers for use in their brakes. Enough of that.

Let us consider waste as it is found in connection with the many finishing departments, which is what we, as finishers, are chiefly concerned about. Perhaps you say, "Oh, well, that lets me out. I have no waste in my department." But let us see if this is true. First, do you reclaim the varnish which collects so rapidly on the spray booths? If not, there is the first example of waste.

Spray Booth Waste

When the spraying of varnish first became practical, many manufacturers would not use it because they saw the amount of varnish which did not become part of the finish, but instead lodged on the sides or floor of the spray booth. This, to the eyes of the man who was interested in the running expense of the finishing room, had all of the earmarks of waste, and the thought of this waste was the barrier which prevented many from installing the spray system.

What happened? It was finally figured that increased production, labor expense and floor space overcame the cost of the so-called waste varnish. Here was the first thought to consider. Many did not stop there. With a little experimenting, many concerns discovered that this so-called waste varnish, which is collected from

the spray booths and stacks, could be very economically reclaimed. How?

Following is the principal manner in which varnish has and can be successfully reclaimed. The first step is to line the interior of the spray booth with a heavy wrapping paper or, if you have a use for a flat varnish such as is used in the interior of drawers, the interior of the booth may be coated with melted japan wax.

The varnish will collect on this paper lining and when the machine is cleaned at the week-end, it is simply a matter of changing the paper. Next a double steam cooker should be purchased, the size to be governed by the amount of cull varnish which is picked up from the machines. As varnish machines must be cleaned whether the varnish is reclaimed or not, there is no added expense in that line.

Reclaiming Varnish

The cull varnish, obtained from the floor or other parts of the booth, should be taken to the room where the double cooker has been installed and placed in the cooker. The varnish now is a thick sticky mass. Depending upon the amount of cull varnish in the cooker, add either turpentine, solvent naphtha, mineral spirits or P. & V. M. naphtha. Turn on the steam and allow the cull varnish to dissolve thoroughly. This may take from 12 to 24 hours.

When the gum has thoroughly melted and gone into solution, it should be strained into a receptacle. The straining operation is important and should be done in a careful manner, for much of the value of the reclaimed varnish depends on the straining of the material. This operation should not be hurried or performed in a haphazard manner.

Depending upon the nature of the varnish and the work it will be used for—this controls the amount of boiled linseed oil and japan drier to be added to the gum and solvent during the cooking operation. There should be some of each added, which is covered by the type of varnish and the amount being cooked. When the varnish is strained it is still hot and will be quite thin; as it cools it will thicken. After it has cooled to room temperature, add turpentine and, with the aid of a hydrometer, bring it to working consistency.

The paper taken from the booths should be cut into small pieces and put into the cooker. As the varnish melts off, the large pieces of paper may be removed with a paddle.

Considering the cost of drawer varnish or varnish for use on some unexposed surfaces, which costs in good money from 90c tc $1.50 per gallon, and the very little expense in reclaiming, it can be readily seen that the germ called "waste" can be given a very decisive blow here.

Another method followed by some, is to place the gum in the proper solvents, in a large receptacle, stir occasionally and allow to dissolve, but this is far too slow and the accumulation on hand reaches too large a volume.

As stated before, if it is desirable to use the varnish reclaimed for a drawer coater, which generally is a flat varnish, there should be added to the gum and solvents while cooking, enough japan wax to bring it to the desired flatness. In no case should melted wax be added to the varnish after it has cooled, as it will not remain in solution.

Wears Like Flint

There's no Substitute for Experience

Half a century of development—half a century of grappling with finishing problems—half a century of *practical experience*—all this is behind The Cleveland Varnish Company.

It is only to be expected, then, that Cleveland finishes may be depended on to give better, more dependable results, at a consistently low unit cost.

We specialize particularly in Lacquers; Clear, Rubbed Effect and Colored.
And in Paragon Rubbed Effect Varnishes; Flat, Velvet, and Semi-Bright.

Our corps of specialists are at your service to demonstrate the most up-to-date methods for securing low initial cost coupled with high quality finished results.

Your Problems are Our Business

THE CLEVELAND VARNISH CO.

Established 1881

3111 East 87th St. **Cleveland, Ohio, U. S. A.**

With the proper solvents added to the cull varnish collected from the booths, the proper amount of linseed oil and drier, and reasonable care exercised in straining, the varnish may be used for almost any purpose for which new varnish is used.

Shellac and Lacquer

Shellac also may be reclaimed. The process of collecting is the same as used in collecting varnish, with paper lining. The paper should be cut into strips after removal from the machine, and hung on a rack in a large receptacle containing denatured alcohol. As the shellac dissolves from the paper, the paper should be taken out and other strips added. When the alcohol has dissolved enough of the shellac gum to give it the required body for working, it should be strained carefully; then it is ready for use.

In order to carry on the salvaging process, only one kind of material must be used at the spray booth. If varnish and shellac are sprayed alternately, it is impossible to reclaim the cull material.

Lacquer also may be reclaimed by a process similar to that by which shellac is salvaged, but owing to the volatile nature of lacquer there is usually very little left to reclaim on a well ventilated spray booth, and ventilation should be the first consideration on a lacquer spray booth.

Cheesecloth and Rags

The next step to be considered in the elimination of waste is cheesecloth, rags and cotton waste. All finishers, no doubt, are acquainted with the many use cheesecloth and rags have in the daily work of finishing in the large factory. This is quite an expensive item, and if you do not reclaim or wash this material, there will appear on this column of finishing expense, several hundred dollars each month.

I know as a fact that in many finishing departments, when a piece of cheesecloth is soiled it is thrown into a can and then collected with others at night, from the various operations, and consigned to the furnace; there is no thought of washing it. Where would these people get off if they used the same procedure with their clothes? With your purchasing agent, look up the amount of cheesecloth and rags used in your department each month. Have him tell you what it amounts to in dollars and cents. If you are not surprised, then you are the exception.

The method recommended to reduce this waste 98 percent is to install two tanks about 3x3x3-ft.; connect to these vats a cold water line, a drain line and a steam line. The tanks should have a hood, a door on front, and a ventilator pipe at the top. When the rags and cheesecloth are picked up each day, just fill one tank with water and throw the soiled rags from each day's work into that tank.

When sufficient quantity has collected, add to the water a few pounds of washing compound, turn on the steam and allow the water to boil for a few hours; rinse well in clear water, run through an extractor or wringer, hang up and dry. The result will be good clean rags to use again, and very little expense in salvaging them. In a large factory an expense of $150 a month can easily be saved this way.

Rubbing Material

Cotton waste, which is used on rubbing operations where oil rub-

bing is done, may be washed the same way, except the tank used to boil the waste in should have a removable screen about one foot from the bottom. As the waste cooks and during the rinsing operation, the pumice stone will settle through this screen. After the waste has been taken from the cooking tank, this screen may be removed and the pumice stone cleaned out of the tank.

The tank in which waste is to boil should have a drain about 4-in. below water line, as the oil will rise to the surface. When the waste is cooked enough and has been stirred several times, open this drain and turn on cold water; then the oily water will run off. The tanks should also have a main drain connected at the bottom, and be controlled by hand valve. Waste and rags from rubbing benches and rags from filling operations may be washed together. Cheesecloth and rags from other operations should be washed separately, so they will not come in contact with pumice stone or silex.

There are a number of other materials which can easily run into many dollars of waste. Take for instance, sandpaper. Most finishing departments use many thousand dollars worth of sandpaper each year. Do you get full valuation out of the sandpaper you use? In most cases not 50 percent of the full working value is used up.

Now, that you are entirely free from waste in your department, just open your eyes; look around and see if it is a fact.

Care of Spray Gun Hose

The fluid hose used in a spraying outfit requires careful attention, if satisfactory spraying results are expected. My plan is to leave the fluid hose filled with the material that has been sprayed. I simply plug up the ends with little wooden plugs to keep the material in the hose overnight or over Sunday.

If the hose is hung up to drain, a thin film of the fluid becomes dry inside and will crack and flake when one begins to spray again. This may result in breaking some of the inner lining of the hose, and it will almost certainly mean that some of these particles of dried finishing material will become dislodged and be deposited on the first few articles that are sprayed, after the gun has been out of service overnight.—S. B. Benton.

New Sales Connection

Mr. Louis Ruprecht, who, for the past 25 years has traveled the mid West and South among furniture manufacturers for the Rogers-Pyatt Shellac Co., has joined the sales force of the James W. Byrnes Shellac Co. as special representative. His activity will be confined to the same territory.

Made *free* from gum

Auto Lacquers

Of Dependable, Superior Quality

We have been manufacturing for 70 years at Newark, N. J.

Chas. Cooper & Co.

10 Mulberry St. New York, N. Y.

Works: Newark, N. J. Established 1857

RAUX ESTER GUM

M.P.

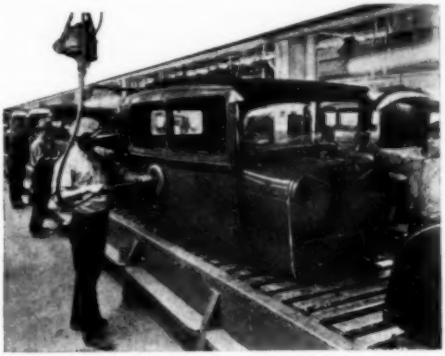
Rosin Ester Gum 115°C
Congo " " 135°C
Manila " " 140°C

Gums cut, fused or treated to meet individual requirements.

ROBERT RAUH, Inc.

488-498 Frelinghuysen Ave Newark, N.J.

Further information and data referring to the use of flexible-shaft driven equipment for polishing the final lacquered surfaces of automobile bodies to produce the smooth high-luster effects



MECHANICALLY POLISHING LACQUERED AUTOMOBILES

By K. N. Kathju

IN DECEMBER issue of INDUSTRIAL FINISHING, page 76, I notice Mr. Brownlie (Briggs Mfg. Co., Detroit) comments on my article "Machine Buffing of Automobile Bodies O. K.," in Sept. issue, beginning on page 82. It is unfortunate that Mr. Brownlie should have taken an issue to an otherwise uncontroversial and now universally accepted mode for polishing.

In the October issue of *Autobody*, page 123, appears the photograph, reproduced above, with the following printed underneath:

"The high luster of *many of the American* lacquered cars, is now being accomplished by the use of *mechanical polishing* at the finish. The accompanying view shows a line of Ford Tudor Sedans, receiving their final polishing with pads operated by flexible-shaft machines. In the early days of lacquer it was contended, after some abortive trials, that there was no field for mechanical polishing. Today, few manufacturers can afford to attain the present high polish entirely by hand."

This is a mechanical age. Those who claim that a certain thing cannot be accomplished, do not know and live in this age. Like everything else, mechanical polishing is a science acquired through hard knocks of experience—fed by the bank books of rich automobile companies and fostered by ambition to accomplish the hardest.

Chemists Laughed

In 1924, when the question of mechanical polishing was first given consideration at Ford Motor Co., lacquer chemists laughed at the very idea. Years of persistent research enabled Ford Motor to learn the secret of mechanical polishing.

(Continued on page 66)

Tests prove Spraco guns faster

In actual tests conducted in the plant of an Ohio Company, an operator using different makes of guns, — using the same lacquer and spraying identical pieces—turned out 20% more work with the Spraco gun than with any of the others and laid on a smoother finish.

Another user of Spraco equipment writes, "We are using 4 of your guns, have compared them with two other types of guns and find yours to be faster in operation and equal in quality of work."

The patented design and construction of the nozzle of Spraco guns insures perfect atomization at moderate air pressure and produces a fine, wet spray that will not split. One stroke lays on as smooth a finish as two or more strokes of a high pressure gun —saves time and saves material. A fan or cone spray can be obtained without changing the nozzle, volume and shape are simply and accurately controlled and locking devices hold any desired setting.

Spraco guns contain many other advantages not found in ordinary guns. Write for Bulletin I. F. 100 which describes them in detail and shows complete industrial finishing equipment.

SPRACO
INCORPORATED
114 CENTRAL STREET SOMERVILLE, MASS.

(Continued from page 62)

True to their advertising, Ford Motor Co., did not set out to finish cars at a certain price. It was desired to get lacquer finish of extremely high luster. Thousands of dollars were spent in determining whether or not such a thing could be accomplished.

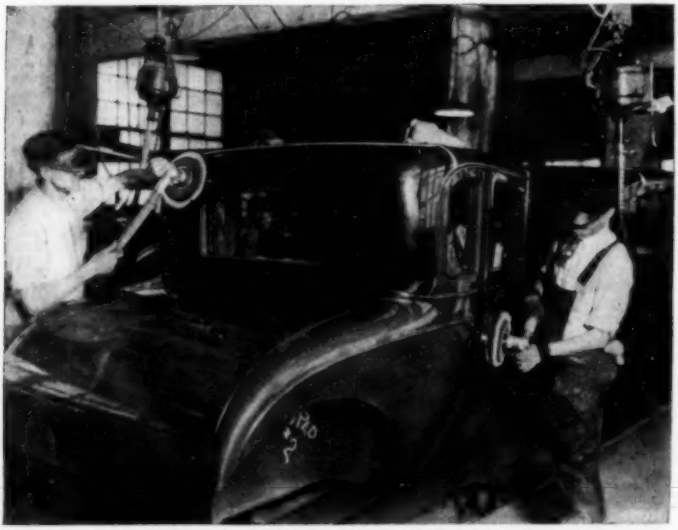
Once it was proved that mechanical polishing was possible, ways and means to accomplish the results, were devised. Today a major part of 6,000 cars turned out daily by the Ford Motor Co. are polished mechanically and defy competition with medium-priced sixes turned out under Mr. Brownlie's care.

Mist Coat; Pads; Speed

As to whorls, which Mr. Brownlie claims are not imaginary but real, I may admit conditionally, that they may not have been imaginary in his case. For example, to make pie crust, almost everyone uses flour, water, shortening, and salt, yet the pie crusts may be vastly different. The baker must know the technique of making a pie crust, else pie crusts are likely to vary from rock-like crusts to real crisp ones. Likewise, to obtain a high-grade and lustrous finish, devoid of whorls, it is imperative that a rich grade of thinner be used for mist-coating. A cheap thinner, with its non-solvent content consisting of a considerable portion of naphtha, is not suited for mist-coating and subsequent mechanical polishing.

Again, different materials are used for pads, depending upon the class and nature of the work; these include sheepskin, camel's hair, nainsook, rayon and silk.

Speed has a very important bearing, especially when a poor grade of thinner has been used. A speed of from 800 to 1500-r.p.m.



Men at work with rotary polishing wheels on both sides of car on the production line.

is required, depending on the type and size of the pad. When poor grade thinner is used, it is imperative that mechanical polishing be delayed until the residual solvent and non-solvent has entirely left the lacquer film.

Salesman Handicapped

I just want to add a word in defense of the salesman who demonstrated his polishing machine and took four hours to finish a job, which was far from satisfactory to Mr. Brownlie. A salesman, generally, is a salesman and not a demonstrator. Mr. Brownlie will admit that a person doing a certain type of work hour after hour, and day after day, would be naturally more efficient than a salesman who is probably called upon to give one demonstration a month.

However, many paint salesmen have lost good sales because they think their work more efficient than that of the man on the job. Possibly he lacks faith in the other fellow's honesty. Let the man who is going to use your material every day, try your material. If he can use it successfully, the sale is made.

Seeing is Believing

Likewise, to satisfy yourself that mechanical polishing on production basis is an accomplished fact, go to Ford Motor Co. and watch the technique of using a polishing wheel. If Mr. Brownlie will write to me, I will give him the names of other body plants using mechanical polishing wheels.

Although not connected with anything pertaining to mechanical polishing, I can prophesy the universal use of mechanical polishing of finishing lacquer within a year in all body plants, except those either obstinately conservative, or lacking funds for equipment.

Additional Comments

By W. E. Cole *

The writer has been following up with interest the controversy and write-ups in INDUSTRIAL FINISHING relative to machine buffing automobile finishes, and has refrained from getting into this inasmuch as we are instrumental in selling the machines referred to, but the write-up by Mr. Brownlie in your December issue (page 76) is such that it calls for an answer preferably from ourselves, as it particularly refers to firms in our territory.

To begin with, Mr. Brownlie takes Mr. Kathju to task when he states that Mr. Kathju takes in a lot of territory when he states every Ford model "A" car built is polished, not by manual labor, but by buffing, from which statement he begs to differ. Mr. Brownlie is absolutely wrong, because it is a fact, and we can prove that every Ford Model "A" car is polished by machine. We have shipped machines to every Ford assembly plant in the world for this operation.

Further, the Lincoln Motor Co. has just put out a beautiful piece of work showing the various steps in the building of Lincoln cars and bodies, and in this booklet there is shown a photograph of Lincoln bodies being finished by this method. Also I wish to state that all the rest of the high-priced cars built in this vicinity (Detroit)

* With the Manufacturers Sales Co., 2180 E. Grand Blvd., Detroit, Mich.

are likewise polished, proving that the application referred to is not confined entirely to lower-priced cars—although the lower-priced field includes the volume users.

Mr. Brownlie further states that he is employed by one of the large manufacturers in this city, who are progressive and would be among the pioneers to adopt this method. We, too, agree with Mr. Brownlie in this statement, as the firm that he refers to was one of the first manufacturers to purchase machines and adopt this method. In fact at the time of this writing we have machines as well as some accessories ready to ship to one of their plants.

Relative to his statement that the buffing machine leaves whorls, and that in one demonstration of a machine over four hours time was spent in order to arrive at any kind of a polished job: This undoubtedly is stated in good faith, but we can assure Mr. Brownlie that we will be glad any time to prove to him in his own shop, under his own conditions, that the job referred to can be rubbed and polished in considerably less time than one hour by one man; and if the installation of machines were such as used in other plants, this time again would be cut considerably.

With reference to the whorls, if the right kind of rubbing compound is used, that is, one that contains no wax, or grease, there will be no whorls.

Sanding Before and Between Coats

Foreman Finisher calls attention to the importance of carefully inspecting the sanding before finishing begins, and gives practical suggestions and recommendations about sanding between coats

By H. J. Milton

THE first step in securing a quality finish on a sanded surface is to select an intelligent, experienced, and careful workman from the sanding department, and assign to him the task of cleaning and air-dusting the surfaces of all work before it is sent into the finishing room. This man, will have ample time to inspect, touch-up, or set aside any work improperly done, therefore the surfaces of all articles passed to the finishing room will be in proper shape for the under coat or final coat, as the case may be.

My recommendation is that a small shelf be built near the air duster, this shelf to hold all the surface repair materials and equipment, such as the different stains, putty, stick shellac and crayons. An electric heating iron can be attached to an ordinary light socket nearby, for use to heat the stick shellac.

The finishing foreman should carefully instruct his men as to the proper sandpaper to use on the various coats of shellac, lacquer or varnish, and how to sand them properly—and he should in-

sist that his instructions be obeyed. A No. 3/0 sandpaper, used on a varnished surface that is ready for the final coat, will cut faster than No. 4/0 paper, but it will probably fill the surface with deep scratches and burn in places which later will show a grayish hue through the finished surface.

Between Lacquer Coats

To obtain the best results, I believe that a No. 3/0 sandpaper should be used on all shellaced surfaces, whether it be the undercoats or the final coat to be sanded. In the use of lacquer coats, many finish manufacturers have advised little or no sanding between coats, but I have found that the use of No. 3/0 sandpaper—well dampened and the work given a light sanding after each coat—produces an excellent job, and it is easier to handle in the rubbing department.

Many firms make different grades of products, some varying from the high class to the medium and cheaper grades, and often the sanders—as well as men in the other departments—are given the impression that the medium and cheaper grades require neither the time nor quality of workmanship required on the higher grade products. Generally the result is that in a very short time there is a general let-down in the quality of the work done, even on the better grades. If this condition is allowed to continue, trouble and complaints are sure to follow, especially on the higher grade work.

Sanding across the grain should be avoided at all times as this cuts scratches of varying depths, across the grain, and these scratches are very difficult to remove when detected—even when worked on by an expert sander.

The Blue Knight's Column

I ALWAYS clip a copy of this Column out of my INDUSTRIAL FINISHING and paste it in a scrap book. Last night at home, I was looking through it and noticed that I never have told you fellows about our "Prove It With Proof" book.

When we first started this plant, we bought ourselves a good-looking loose-leaf portfolio containing lots of empty pages . . . . you ought to see them now! They certainly "prove with proof" that custom-made lacquer is what the particular manufacturer wants to use.

In this book are photographs of letters from many of the biggest people in their line, telling us how satisfactory ROXALIN products are.

Which all goes to show that a custom-made lacquer, like custom-made anything else, gives the best service and the best results, because it's specially built for the job.

Ask us to have a man from our Sales Department pay you a visit, and when he calls, you ask him to show you this book of ours.

The Blue Knight

ROXALIN FLEXIBLE LACQUER COMPANY
[illegible] SEVENTH AVENUE
LONG ISLAND CITY

"Ty-Loid"
Lacquer
Enamels

Make An Exceptionally Fine Rubbing Surface

And That Means--

Quicker Rubbing Lowered Rubbing Cost

Partly because we have developed in our laboratory the perfect formula for the lacquer that sprays on smoothly—

Your Finishers can always depend upon that remarkable rubbing surface. It does mean easier and quicker rubbing, and a corresponding saving in your finishing costs.

This Company has been makers of TY-LASTIC VARNISHES for forty years. We are now making TY-LOID LACQUERS which meet the same high quality standards. We manufacture a complete line of Striping, Satin, Clear and Colored Lacquer Enamels for the Furniture and Automobile industry, also a complete line of Primers and Undercoatings in oil and pyroxylin for the most critical. Special colors and requirements for all classes of work can be worked out in our plant to the customer's satisfaction.

Manufactured by

The Western Reserve Varnish Co.

1251 Marquette St. Cleveland, O.

If they are not detected, and are finished over with the final coat, these scratches will remain visible and mar an otherwise perfect finish.

The sanding of mahogany, walnut and other dark finishes requires a workman of long experience—a man who is careful and who has his mind on his work at all times—to eliminate white edges. It is only by very skillful workmanship, and keeping the sandpaper well dampened, that these sanded—through white edges can be properly crayoned or restained and put into first class condition.

Acid Proof Table Tops

There is often a call for a finish on table tops or desks that will stand strong medicines and chemicals spilled on them, and which would spoil an ordinary finish. Of course, this is quite a job whether finished new or refinished. The following formula should be used and made up as follows:

Iron sulphate	4 parts
Copper sulphate	4 parts
Potassium permanganate	8 parts
Water	100 parts

These salts should be boiled in the water until they become dissolved. Then brush on two coats while hot. The first should dry before the second is applied, of course. When this material becomes dried on the surface, wipe off the surplus salt that remains on the table top. Formula No. 2 is made of:

Aniline	6 parts
Hydrochloric acid	9 parts
Water	50 parts

After solution No. 1 has been dried and wiped off, two coats of No. 2 should be brushed on and allowed to dry well. The ebony black color does not appear for

several hours. The third treatment for the table tops consists of:

Linseed oil.....3 parts
Turpentine .....1 part

This should be brushed on hot; the oil should be well wiped into the wood with a cloth and the surplus oil wiped off. In heating the oil and turpentine, care should be taken to avoid placing it near an open fire. The heating should be done by suspending a container with the mixture in a pail of boiling water, table tops or desks finished this way can be washed with soap and water and treated rather severely without doing much if any harm. This acid treatment is much more serviceable than a paint or a varnish finish.—J. K. Cooper.

The Finish Sells the Furniture

It is freely admitted by furniture merchandisers that finish is a prime factor in closing a floor sale. The average furniture buyer is influenced more by an attractive outward finish than by style or the quality of inside construction. This being the case, there are unusual opportunities for profitable advertising when it comes to playing up the surface of furniture and goods allied to furniture. For example:

1—" . . . and a surface that will retain its original beauty through a lifetime . . "

2—"With a glowing and lasting beauty, this suite represents the last word in the finisher's art..."

3—"The mellowness of the old mahogany surface—a joy to every one who admires it in your home."

4—"White linen and sparkling silver plate—cut glass and flowers will find the beautiful surface of this dining room set worthy of them."

A-LAC-D LACQUERS

Durability
Elasticity
Non-Porosity
Adhesion

—these are the qualities that constitute the *ideal* lacquer for industrial application.

—the qualities you get in every quart and drum of ALACO lacquer *plus* quick drying properties!

If you are having lacquer difficulties in your plant, our Engineering Dept. can be of real assistance. Special finishes to suit special requirements. Color chart and information for the asking.

ATLANTIC CHEMICAL CO.

Manufacturers of High Quality Lacquers for 18 Years

Irvington, N. J.

ATLANTIC CHEMICAL CO
Lacquer
A-LAC-D
PRODUCTS
IRVINGTON, NEW JERSEY

What Price— A Quality Finish?

The final operation but first seen, making or breaking the product upon which your reputation hinges.

The prevalent problem of the day in every finishing room throughout the country is:

1. That the ultimate consumer must be satisfied.
2. That production costs must be lowered to allow the producer to successfully meet present day price requirements and be a leader in the field, at the same time a fair margin of profit is necessary.

Attractive appearance at a cost that will keep your budget where it belongs is guaranteed by a STILLE finish.

Therefore, we have a point in common, as it is equally important for us to maintain our standard of quality at a price that is attractive for you. Samples and prices of our Stains, Shellacs and other wood finishing materials will be gladly furnished on request. May we send them along?

E. T. STILLE & CO.

Main Office and Factory
2343 Greenview Ave.

CHICAGO, · · ILLINOIS

Southern Office and Factory
High Point, N. C.

The craze for bright colors in a score of commonplace articles is additional proof that appearance and therefore, surface, are important in advertising. For instance, we have colored typewriters, colored alarm clocks and colored safety razors. These are not merely for the fastidious but for the average buyer and user of such articles; and the demand for them is brisk.

A furniture buyer in a large New York store said recently:

"For nearly a year we had an odd gate-leg table in our stock which was painted canary yellow. It had been finished for some customer who later failed to take delivery. We noticed that it attracted the attention of hundreds of customers, even at the far end of the showroom.

"Finally we realized that this table had a certain attraction because of its unusual color and excellent finish. So we moved it around from one section to another—wherever we wanted to attract the attention of the people at that particular time.

"For instance, if we were pushing dining room sets, we placed this table in that section, and it certainly helped to bring the buyers. We staved off selling it as long as we could."

But it is in advertising, that finish is a most powerful selling appeal when it comes to the consumer. Buyers and dealers know that finish is an important factor in selling specialities and they are merely reflecting public opinion in the matter.

Words as well as pictures are perfectly capable of presenting specialities in a way that the appeal of surface or finish is utilized with telling effect. The retoucher's art has done much to transfer the glistening table top to the printed

page—following on the heels of the expert, modern commercial photographer of today.

Saves Spray Waste

I noticed an article in a recent issue of INDUSTRIAL FINISHING in regard to saving the waste material from a spray booth. I have invented and obtained a U. S. patent on a "spray tank" which I claim can be successfully and economically employed to catch and salvage material that otherwise would be "spray waste."

In coating small articles, such as buttons, buckles, clasps, etc., with an enamel or other similar material, the articles are arranged in trays, and the coating is applied by means of a spray gun, but a comparatively large proportion of the coating material does not fall on the articles to be coated, and hence is wasted. The object of this invention is to provide a tank to contain the coating material and over which the articles to be coated are placed, so that the coating material which does not adhere to the articles may fall back into the tank.

The tank may be of any suitable size. In the bottom a screened outlet connects by tube or hose with the spray gun. In one side of the tank, near the top edge, an opening connects with an exhaust pipe through which fumes from the tank may be drawn.

The small articles to be sprayed are placed upon trays and these trays are set on racks or cross slats which extend across the top of the tank and rest upon its top edges. The tank is partly filled with paint, enamel, varnish, lacquer, or whatever finishing material is to be used. The articles to be coated are sprayed in the

new!

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For the user of industrial spray equipment this new *Economy DeLuxe Sprayer* gives better application of any paint, varnish or lacquer. Combines high efficiency, simple operation and puts new life in the paint shop. Light in weight, does not clog, easily cleaned. There are many good reasons for the present popularity of Economy Spray Products PRICED: *DeLuxe Spray Gun—with material tube, cover, container, 25 feet air hose and connections and agitator . . . $32.00. Above without agitator . . . $30.00. DeLuxe Gun without any of above accessories . . . $22.00. 25 feet air hose with connections . . $4.50. 1 quart metal container without cover . . . $2.50.*

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usual way and the surplus coating material falls back into the tank and is used over again. The strainer in the tank outlet prevents any foreign matter from entering the material hose.—E. M. Stephenson.

Lacquer Over Old Finish

When applying lacquer over old varnish, enamel paint, or japan, the first and highly important operation is to scour the surface thoroughly with "Wetordry" sandpaper and gasoline, and wipe dry and clean. Of equal importance is the second operation —spraying on a coat of emergency sealer, clear or black, as the character of the job may require. Within the hour, following this preparation, the colored lacquer enamel coats may be applied with confidence.—A. J. Beecher.

A. D. Gutchess Now Heads DeVilbiss Co.

The reorganizaton of The DeVilbiss Co., of Toledo, Ohio, following the death of the founder and president Thomas A. DeVilbiss, finds Allen D. Gutchess, a nephew of Mr. DeVilbiss, in charge of the immense concern which, during the lifetime of Thomas A. DeVilbiss, grew from an obscure operation to an institution represented in all the markets of the world, and supplying spray painting and finishing systems, medical atomizers, and perfumizers to all civilized countries.

Mr. Gutchess went to work for his uncle at the age of 14 years, and while now but 35, he has so mastered the intricacies of the great industry that he was the obvious successor to the president.

Other new officers are William M. Booker, Chairman of the Board; Frank A. Bailey, Vice-President and General Manager; William F. Gradolph, General Sales Manager; Frank C. Penoyar, Secretary; Walter W. Conklin Treasurer; and Howard DeVilbiss, son of the founder, Assistant Secretary. The business is in splendid condition and its long established leadership in its field more solidly apparent today than ever.

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Modern chemistry should be able to add together desirable qualities and remove objectionable features of the various wood dye types

As Gaul of old was divided into three parts, so wood stains of old were of three types; water, oil, and spirit. Each of these types has one or two distinct advantages and also a decided disadvantage. A list of the good points of each type gives complete specifications for the perfect wood stain.

Ideal Factors

The water stain affords the most permanent of colors in the widest variety. Being water soluble, these colors do not bleed into subsequent finish coats.

The oil stain does not raise the surface fibers of the wood. The oil helps seal the wood pores.

Spirit stains dry quickly. It is evident then, that the ideal stain must use the water soluble colors but with an oil-alcohol mixture as a solvent.

Impossible Combinations

It is not the above "ideal stain" which is impossible; modern chemistry has performed greater miracles than that for industry. Rather, the impossible combinations are past attempts to mix with the water an oil or other non-grain raising vehicle. They simply did not work as they should.

As long as the stain contains water there will be fiber raising, as long as the stain contains oil soluble colors there will be fading and bleeding, as long as spirit soluble dyes are used there will be fading and bronzing.

Chemistry That Is Not Yet In Books

Modern industry is several years ahead of the text book. This is especially true in chemistry, the newest and most rapidly growing science. It will not come as a shock to many then, to learn that the Dakalite Products Co., Inc., of 13000 Athens Ave., Cleveland, is now announcing a wood stain which does not contain a drop of water yet uses only the well-known, fast-to-light, water soluble colors with which every foreman finisher is familiar. The solvent is an oil-spirit mixture whose drying time is a matter of an hour or two depending upon humidity, ventilation, etc. The many savings made possible by this stain will be evident to the wide awake finisher. *(Advertisement)*

QUESTIONS AND ANSWERS

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Metal Stampings

In the December issue of INDUSTRIAL FINISHING, there was an article (pages 34-39) on a dipping and whirling process of finishing, as done in a Laundryette washer. We are enclosing samples of metal pieces which at the present time are being given a dipped and baked enamel finish by the slow, tedious, hand-dipping process (Note: The pieces are thin metal stampings about 1½x2½-in. One is folded to double thickness and all have been punched.) When the writer read this article he wondered whether it would be possible to finish these metal pieces by this "Laundryette" process.—W. Mfg. Co.

In my opinion these metal stampings could not be very satisfactorily finished with lacquer by the dipping and whirling process of finishing, as described in the December issue of INDUSTRIAL FINISHING. My reason for making this decision is that the pieces have comparatively large flat surfaces which are bound to come in close contact with each other, and therefore it would not give a satisfactory finish. If the pieces were more or less round or square, and the flat surfaces were not comparatively large they possibly could be finished by this process.

I believe the best system of finishing these metal pieces would be by means of an automatic dipping machine somewhat similar to those that have been described and illustrated at various times in INDUSTRIAL FINISHING magazine. I would recommend a heavy-bodied nitrocellulose lacquer. The cost per gallon, of course, would probably be more than that of the baking enamel the company is now using, but it would not be necessary to bake the finish. Furthermore, the speed of finishing would probably be greater than it is at present.—F. C. Overhauser.

Removing Pad Marks from Packed Furniture

What is the best way to remove pad marks from new furniture?—B. C. F.

The customary method of removing pad marks from new furniture is to rub with pumice stone and oil and then clean up the surface. Most furniture is rubbed at the factory with pumice stone and oil, therefore you would be merely continuing this rubbing process if you use the same materials to remove the pad marks.

Sometimes, of course, the finish is printed so badly that the pad marks go deeply into the finish and cannot be rubbed out with

pumice stone and oil. In this case it is necessary to "burn in" the bad spots with stick shellac and a warm knife, and then rub the surface. In other instances, it is necessary to apply a new coat of varnish over the entire surface which shows pad marks, and then rub down this varnish with pumice stone and oil in order to remove the pad marks.

It is difficult to give definite instructions for removing pad marks, as the situation is different in practically every case, and what would apply one time would not be the best thing to do on another occasion.—W. M. Martindale.

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Finishing Toilet Seats

We are manufacturers of wood toilet seats in natural wood and color enamel finishes. We are compelled to use water stain, as our goods are placed in light bath rooms where the sun's rays penetrate through windows. If we use oil or spirit stain, the finish will fade easily. In using water stain, the glue joints in the wood show through the finish very plainly.

We have been wondering how to overcome this and would like to have some suggestions from a practical finisher on same. Would also like to be advised how long these parts, that are dipped in water stain, would have to stand in drying racks at the temperature of about 70-deg. F., with relative humidity of about 5½? What would be ample time to extract all of the moisture put in them by dipping them in this stain?—M. R. Co.

One suggestion that might help in removing the trouble you have been having with open joints on your toilet seats, which are stained with water stain, would be to use a waterproof glue on gluing the wood in the seats. This would not be affected by the water in the stain, and it should prevent the joints from showing after being finished.

The drying conditions you mention are not as good as they might be for drying moisture out of the wood. I assume that the relative humidity of "5½," which you mention, is that the wet bulb reading is 5½ degrees lower than the dry bulb reading, or in other words the dry bulb reads 70-deg. F. and the wet bulb 64½-deg. F. If this is the case, the relative humidity of the air of about 72 percent is not a very good drying condition.

In fact, with this relative humidity, the tendency would be for your wood to have a lower moisture content than about 14 percent. This, of course, is somewhat high for use on such articles as toilet seats, which are subjected to indoor exposure.

A moisture content of about 7 percent would be about right for this kind of work. To obtain this moisture content in wood, I suggest that you dry your seats, after they have been dipped in water stain, in a room with a dry bulb temperature of 80-deg. F. and wet bulb about 62 deg. F. This would give a relative humidity of about 35 percent, and would tend to bring the moisture content of the wood down to about 7 percent. The stained seats should be left in this drying room about 24 hours before any more coats are put on.—L. F. Worlendar.

Finishing Office Desks

We are interested in trying to obtain a durable finish for our desks. At the present time we are using a flat varnish. We thought possibly of using a lacquer of some kind, if it does not prove to be too expensive. We understand that some of the desk manufacturers, who manufacture desks of a similar quality to ours, are using a lacquer finish, and if it is possible to do so we would like to know just what their method is, the kind of finish they are putting on and the material they use.—A. T. Co.

Several different systems are used by desk manufacturers for finishing desks with lacquer. The exact schedule varies according to local conditions and the quality of work being turned out. The

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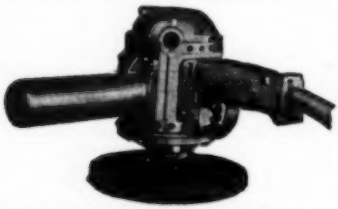

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fills a real need in plants that apply finishing materials. It is amazingly efficient on work ordinarily done by hand and requiring hours of tedious labor. Operates on direct or alternating current . . . ball bearing throughout.
This "pistol grip and trigger switch" disc sander can be used advantageously by concerns manufacturing either wood or metal products and applying all kinds of finishing materials. It is a time saving, labor saving little machine and its small cost makes it a real investment. Ask for Bulletin I. F. for detailed description.

WOODWORKERS TOOL WORKS
Quincy Station, Chicago, Ill.

system that is being used by a large desk manufacturer on a commercial grade of office furniture is as follows:

Fill the wood, either oak or walnut, with a paste wood filler, which is dried overnight in a dry kiln. Next morning a 2-lb. cut of shellac is applied by spraying. On some of the work this firm uses straight white shellac; on other work, a mixture of half white and half orange—to get the toning properties of the orange shellac. This shellac coat is usually dried overnight, although on some of the work it is dried only four or five hours and then sanded smooth.

The tops of the desks are finished slightly different from the bases. The bases on this lower-priced work are given a coat of heavy-body lacquer over the shellac coat, and this lacquer is dried four or five hours; then a coat of velvet flat varnish is applied. The velvet flat varnish is air dried overnight before packing for shipment, although often the desks get much longer than this for drying before they are packed for shipment.

The tops of these desks are given two coats of clear wood lacquer over the shellac coat, the two coats being applied four or five hours apart. The last coat is allowed to air dry overnight; next day the tops are rubbed with a rubbing machine and pumice stone and oil. The velvet flat varnish on the bases is not rubbed at all, but has such a luster that it approximately matches the rubbed lacquer tops.

On higher grade work, often two coats of lacquer are applied on the bases of the desks, as well as on the tops, and the last coat is rubbed. Sometimes the last coat of clear lacquer on the bases is replaced by a coat of flat lacquer,

which requires no rubbing, and only the tops are rubbed.—R. L. Masterson.

That Finish on Chinese Emperor's Furniture

The varnish used on the ancient Emperor's furniture, such as described by Mr. C. Dan Youngs in the December issue of INDUSTRIAL FINISHING (pages 30 and 32), is an exudation of *tsi zin* of China or *urushi no ki* of Japan.

It is a species of poison sumach called *rhus verniceferus*. The exudation or sap is obtained from the tree by wounding the bark with a sharp knife in the manner of gathering maple syrup; this is usually done in the summer time. After collecting it in the bamboo utensil it is set aside to form two layers; the watery part is thrown away and there remains a grayish viscous substance—the *urushi* proper or genuine *ki urushi*.

There are offered in the market over 20 varities of *urushi*, not mentioning the various grades, hence an amazing variation of the analytical results by scientists. The film obtained by using *urushi* is very hard, yet tough and will resist all acids, alkalis, hot water and heat up to 300-deg. C. (572-deg. F.) It takes a most beautiful polish which cannot be paralleled by any other substance.

The drying action is not yet known exactly. Personally I believe it is by both oxidization and polymerization. The method used by Japanese and Chinese requires a dark and damp place, and temperature of 20 to 30-deg. C. (69 to 86-deg. F.), which will take a day to several days, according to the thickness of the coating. At other temperatures, or in a dry room, it refuses to dry altogether,

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and remains gummy or tacky all the time.

Another peculiarity of *urushi* is that it actually becomes better by aging, ("improves with age"). If however, speed is required and the ground will withstand heat, it can be stoved at 100 to 200-deg. C. (212 to 392-deg. F.) Under such circumstances it will take only a few minutes to a few hours to be ready to be rubbed and polished.

In 1909 and 1910, a serious attempt was made to introduce this material into England, but the task was finally abandoned as hopeless due to working men being extremely averse to the toxic action of *urushi*, and so unreasonably frightened that all experiments had to be discontinued.

Morrel in his "Varnishes and their Components" says, regarding *urushi*, "For airplane propellers it is the best coating for durability yet known," page 151, and I sincerely second him.—F. S. Araki.*

It is with considerable interest that I read Mr. C. Dan Youngs' article in December issue (page 30) of INDUSTRIAL FINISHING, on the finish of an old Chinese suite of furniture. According to history, lacquer was first discovered in the latter part of the Ming dynasty about 350 years ago, but in the middle of Manchu dynasty it died out and became a lost art. The secret has long been sought, for old Chinese colorings and lacquer were remarkable for their lasting qualities.

According to what is known of

---

*In charge of Lacquer Dept., Mikami Studio; Oriental and Occidental art objects and jewelry; specialists in fine art repairing and urushi lacquer work; 48 West 52nd St., New York.

these early Chinese lacquer finishes, the article must have been coated with eight or nine layers of "lacquer ashes" in paste form, which was supposed to be a certain kind of ashes united with a raw lacquer.

After each coat had dried for several days it was polished. Then layer after layer of lacquer was laid on—on high-class work often as many as 300 layers. This lacquer was colored and often laid on thick enough so as to carve into the finish after it was hard.

This finish, so history tells us, required three and four years to be completed. A peculiar part of this lacquer was that it dried in a damp atmosphere and it had to absorb moisture before getting hard. An article, after it was lacquered, was covered with damp matting to give it the required moisture. This old Chinese method of finishing is some contrast to the present day finishes—where minutes count in production.—J. K. Cooper.

Referring to that "Chinese Finish Centuries Old," the interesting feature of this finish is that no solvent will soften it.

This characteristic is possessed by a present day product *which may be sprayed at intervals of one hour between coats, is unaffected by ultra violet rays, will take a superior polish, and when aged, preferably in the sun, is unaffected by its own or any other known solvent. This product, a flexible finishing lacquer, is advertised in that same issue of INDUSTRIAL FINISHING—A. J. Beecher.

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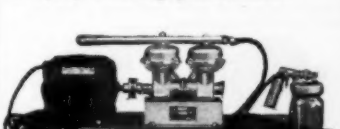

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Finisher Recommends a Striping Material

Answering J. R. Co.'s question (pages 72, and 74, Dec. issue) regarding striping material, I offer the following suggestions:

If stripes are to be applied to enamel, I suggest the use of any of the new 4-hour enamels, adding just a little more of the desired color in japan. Do not add too much japan color, but just enough to cover well and yet retain a luster. Generally the striping that is done with japan color dries a little flat, but when covered with a clear finishing material, this latter acts as a protective coating and also supplies the luster you desire.

If you are using a medium gloss finish, mix japan striping color with a high-gloss enamel. An old method often used when striping was applied over enamel not to be finished all over with clear varnish, was to glaze the stripes with varnish to protect them and give luster. It was customary to mix in the glazing varnish a little of the same color the article was finished in, but leaving it transparent so the color of stripes would show through.

If the article is dark and a dark red stripe is desired, a very light red stripe must be used, since dark glazing material will darken the stripes.

As a last suggestion, if you care to use it, gold bronze or silver bronze makes a dandy stripe that has a good luster and requires no glazing. These bronzes are available in many colors, but they should be of the grade suitably fine enough for striping, as the regular enameling bronzes are too coarse for nice striping. If a

(Continued on page 114)

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Finishing Refrigerators and Cabinets of Metal

Cleaning all kinds of metal surfaces, putting on priming coat, baking japan, enamels in color, oven temperatures and general production management

By Fred Mannhardt

IN THE QUESTIONS AND ANSWERS of Dec. 1928 issue (page 71), I notice T. F. Co. seeks information in regard to "finishing exterior metal cases for refrigerators." In the first place, what kind of metal? For cold-rolled, steel or iron, the safest bet is the baked proposition.

To proceed: First clean off all grease and rust. If gasoline is used for cleaning it is well to "bake" the metal afterwards, using a temperature of about 400-deg. F., or a slightly higher temperature than when the enamel is baked. This will burn off the scum or grease. Then sand lightly, but thoroughly. The big point is to clean the raw metal perfectly. In INDUSTRIAL FINISHING there are advertisements of excellent metal cleaners which are not as dangerous as gasoline. Take your choice, but be sure to clean the metal surfaces thoroughly.

The First Coater

A good grade of "rubber" first coater baking japan is then applied. This may be sprayed, dipped or brushed on. My preference is for the sprayed job, for the sake of cleanliness, and the time saved. A dipped job doesn't have the uniformity of surface of the sprayed or brushed job. It also collects more dust while the excess material is draining and dripping off.

Brushing isn't as fast as spraying and one of the essentials of a good job is to get it in the oven just as soon as possible after the coating has been put on. When the rubber coat is baked, the surface may or may not be lightly sanded, depending upon choice or whether the cost will allow it.

If you sand the surface, be sure to dust it, and if possible use a tack rag before applying the second coat. Suppose you are limited to two coats. In that case it is better to avoid sanding the first coat, for two reasons. Finishing enamel is not as heavy bodied, or pigmented as is the rubber coat, and for this reason it is liable to show sandpaper marks, or give an uneven gloss.

Another thing: If you should sand through to the metal, the transparency of the finishing enamel will show a glazed brown effect where the first coat has been cut through, so it is better to let the sanding go; spray right over the first coat with the finishing coat, or give the surface three coats. In all cases, one or two of undercoats, or one of undercoat and two of finishing.

As far as covering qualities are concerned, some colored enamels do not cover even as well as the black baking japan. So, likewise look out for spots that are sanded through. If you apply only two coats, and sand through the first one, you have a place that will

show on the finished job. In this connection, I feel inclined to always recommend that the primer be as nearly as possible the same color as the final finish.

For instance, if a refrigerator is to be finished in maroon, use a primer as near the maroon color as possible—likewise green, and so on. For pink, robin's egg blue, cream, and the lighter tints, it is well to use white for the primer. The darker shades, aside from black, may be baked at temperatures not to exceed around 250-deg. F. The lighter tints require lower temperatures, say around 150 to 200-deg. F.

Baked Blacks and Colors

Avoid baking white in an oven where black has been baked, as the stagnant oily traces of black which remain within the oven will brown up the coats of white. If it is impossible to have a separate oven for baking white coats, leave the oven door open an inch or two while the baking is in progress. White coated articles left in a cold black oven (with no heat on) will not be harmed. It is only when heat starts the oven to smoking that the trouble begins for the white.

I mention this, because of the fact that often certain work finished for the day is left out overnight. This should not be done. Place the articles in the oven out of the dust. The best way, of course, is not to coat anything until you have an empty oven to receive it. A dipped job should be put in oven as soon as the excess material has drained off.

Galvanized Iron Surface

So much for the cold-rolled steel and iron. Now for aluminum, brass, copper, or galvanized iron, or what have you? These are the greasier metals; enamels, as a rule, do not adhere to these surfaces tenaciously. Some of the boys scratch-brush, sandblast, or wire-wheel them first, before applying primer. Some also use acids.

For galvanized (zinced iron), kill the shiny surface with vinegar or diluted acetic acid first, sponging or brushing the surface over with either one. Then thoroughly cleanse it with clear water and apply the first coating, as in treating iron and steel. If scratches, holes or traces of abrasive are in the metal, you may putty these first with a good grade of baking putty, or after applying and baking the primer. Sand the puttied spots before coating them.

Bleeding Reds

Do not try to cover red with a light color without first giving the red a good coat of varnish. If you are compelled to put on a light color over red, through some mistake or on a repair job, first test the red in the oven. It is a 100 to one shot that it bakes through the white coating, even if a coat of varnish (sealer) separates the two. In that case try to get a non-bleeding red, or let the light finishing coat air dry. What has been said of metal finishing in this article applies not alone to refrigerator cases, but to other pressed metal products as well.

Clean-Up, Paint-Up Bureau Moves

The National Clean-Up and Paint-Up Campaign headquarters will be moved to the seventh floor of a new building at 310 E. 45th St., New York City. Everyone having business with the Bureau is requested to make a record of the change of address in order to avoid delays in reaching the Bureau by mail or by telegraph.

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Conveyor Bearings in Baking Ovens

Suggestions and recommendations about bearings within high-temperature baking ovens; types of bearings, metal linings, lubrication, cleaning, cooling, etc.

By D. A. Hampson

WITH THE widespread use of continuous finishing processes, there has come the problem of bearings for conveyors and trucks that are subjected to high temperatures for considerable periods. The film of oil or grease is quickly dissipated in temperatures of 400-deg. F. and over. Ball bearings and roller bearings fail because of this same lubricant weakness.

In the case of fixed bearings operating under such thermal conditions, the writer has known of some that were successfully cooled by water circulation. Boxes were made specially for the job—cast iron with babbitt lining—and they were chambered for the water which was piped to them. It wasn't hard to arrange oil lubrication for such bearings even though they were working in a temperature of approximately 600-deg. F.

But for bearings that move in and out, no such provision can be made. It would be possible to have them oiled every time they emerge from the ovens, but such procedure would be very expensive. Graphite has been used, and it does defy heat, but it is difficult to apply.

Bearing Metal

A different kind of bearing material might be suggested, namely, a bushing of self-lubricating material that would be used inside of each wheel and roller that traverses the heated area. Such material is available both in finished bushing form and as round bars from which bushings are made in the shop. The latter is the cheaper material to use and costs very little more than ordinary bar bronze that is found in cored or solid form in all machine shops.

Ordinary bronze requires lubrication. At the speed of conveyors and kindred apparatus, lack of lubrication would not prevent operation, as it would with machinery of a higher order, but it would increase the power consumption and shorten the life of bushings.

Bronzes are now kept in stock that operate successfully without lubrication. These are distinguished from phospher and manganese bronze in name and nature; they are known as "high-lead" bronzes and are a mechanical mixture of lead and copper. It is the lead content that gives lubricating quality. Lead itself is an ideal bearing material, but it is not used alone because of its softness. Backed by a copper matrix, it does very nicely.

The high-lead bronzes are made in different grades. A grade with relatively small lead content will do for the work mentioned in finishing departments. This material

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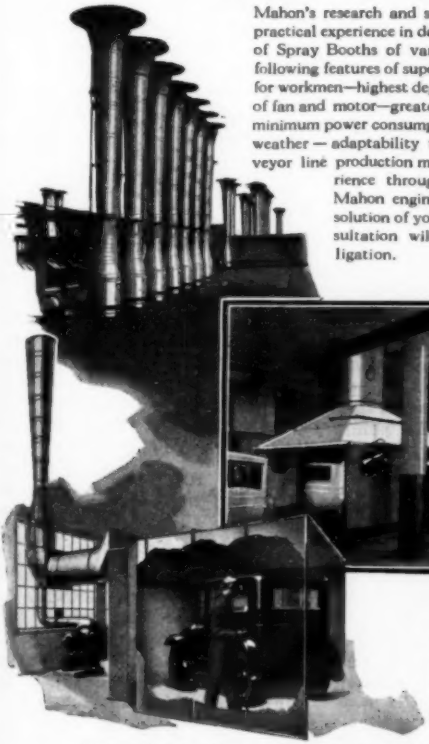

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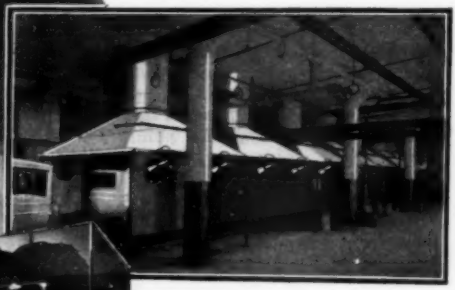

Illustrations here show Mahon Evase Type Exhaust Stacks—Mahon Tunnel Type Spray Booth in use on conveyor line in a mammoth auto body plant, and an individual Booth with turntable for use in auto paint shops.

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machines easily. It is softer than ordinary bronze, therefore it must be handled a little more carefully when "pressing home." Too close a fit on its pin is not advisable.

Buy Tested Materials and Avoid Trouble

Finishing troubles of various articles would be greatly reduced if the manufacturer would make it a point to find out whether the firm supplying him with paint, enamel, stain, varnish, lacquer or whatever he uses has a physical laboratory where they try out each batch of material made.

Not a haphazard, happy-go-lucky way of doing it, but an honest-to-goodness test in a laboratory that is equipped with baking ovens, spraying booths, coating machines and all latest devices known for applying paint, enamel, etc.; where they make it their business to try to duplicate the method and conditions that you have in your plant; where they have experienced men to make these tests, men who have worked in plants similar to yours and have been confronted with the same problems you have.

The liquids used in the majority of industrial paints and enamels are composed of varnish that is liable to be stringy if overcooked or it may have a granulated appearance if under-cooked. The pigments are largely lithopone, zinc, tetnox, asbestine, talc, etc., that vary in liquid absorption.

Lacquers and baking enamels are of an entirely different nature, but the same rule applies to them insofar as the variation of raw materials, hence the necessity of a rigid physical test of each batch of material made, for color, viscosity, opacity, grinding, flow, bake, air-drying and general working conditions.

In dealing with a concern that does make these tests before shipping you the goods, you are assured of as uniform a product as it is possible to make, your finishing troubles are reduced to a minimum and it doesn't cost you a cent more—W. B. Fralick (Paint and Varnish Tester, Practical Demonstrating.)

Cleaning and Refinishing Galvanized Iron Containers

Under the above title, appearing on page 78 of January issue, I notice an inquiry by M. O. W. Co. which interests me. The inquirer does not state what the containers to be cleaned and repainted are, nor their size, but from the large quantity mentioned it would seem that they are cans of some sort that are loaded and returned, then cleaned and painted ready for another trip. If such is the case, a systematic method of handling and doing the work might well include some lengths of roller conveyor, together with the present or possibly some suggested equipment.

So far as removing the old paint is concerned, I believe the company can do that quicker with a sandblast outfit than any other way. Whether or not the caustic soda treatment is required for other purposes is a fact not stated. If carried far enough, sandblasting will remove the zinc coating, but there is a "happy medium" between the two extremes that will be found satisfactory if the metal will stand usage and repeated preparation for refinishing, it will stand intelligent sandblasting. This treatment will reach the seams too, and the

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Imperfections in plywood panels are usually due to an excess of moisture content in the core stock, cross banding or veneer before finishing. Warping, shrinking and sunken joints, result from putting the plywood stock into the manufacturing process before it has been properly conditioned. Case-hardening, checking and blistering in finishing processes are the result of conditioning which does not properly eliminate excess moisture, and can be perfectly eliminated by efficient drying methods.

When the plywood panels and the finished article are manufactured in the same shop, the stock should be held as short a time as possible between the last drying operation and the finishing room. If the stain and filler are dried by DRY-SYS equipment, this drying operation does a great deal to reduce the moisture picked up by the plywood during its progress through the shop. But if the panels are made up at a different plant, or if they are held in stock before being used, then a drying is absolutely necessary before the plywood stock is put into the manufacturing process. Otherwise excess moisture content will cause sunken joints and other serious defects.

In like manner, core and dimensioned stock must be properly conditioned when used. Only proper redrying just before laying will insure freedom from checks and other troubles.

Drying Systems, Inc., designers and manufacturers of drying equipment, will gladly give you any further information you may desire on this subject if you will write them at 1809 Foster Avenue, Chicago, Illinois.

(Advertisement)

general surface will be in good shape to receive lacquer.

As a suggstion, they might try air-drying meter enamel. It will dry for handling in about three hours and is elastic enough for sheet metal work. If desired, this could be baked slightly, as suggested by R. L. Masterson.

The lengths of conveyor will save much of the handling and storage costs. Arrange the work in station form down a hall or long room or around a smaller room. The soda tanks are *Station 1;* then a length or two of conveyor to *Station 2*, which is the wire brush or sandblast; then another length to the spray booth, after which another length might pass through a form of quick-bake oven, etc. A sandblast will do the work in about the same time as a spray gun.—D.A.H.

Brightening Coppered Coil Springs

Along with certain industrial products, springs of different kinds are often used. Some of these are enameled, some plated, and still others may be left just as they were formed. The latter is the easiest way and frequently the one adopted because of the high cost of treating a quantity of irregularly-shaped small parts.

The writer has seen an interesting method of upgrading the appearance of coil springs which are used on a wood article that is otherwise nicely finished. These springs come from the forming machines with considerable oil on them; this would gum up and attract dirt in time, and it presented a disagreeable problem to the manufacturer. After some time the management found a simple way to solve this problem.

A tumbling barrel was made and this barrel is loaded two thirds full with springs; then sawdust is put in to come up level with the top. After being revolved slowly for about half an hour, the load is dumped out and the springs are separated. All traces of oil are removed and the springs are vested with a gloss that does credit to the remainder of the assembly. The sawdust brings the lightly-coppered wire up to a finish something akin to a gold, which is extremely attractive on the counter of a retail store.

Strange to say, the springs do not tangle up at all during the tumbling process. Although there are coils at each end, and several bends between, there is no trouble at all with tangling when the load is dumped.—H. D.

George Belcher Writes:

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EDITORIAL

Powerful Sales Appeal in Color Pictures

Pictures in color are lavishly used in present day advertising and selling. One of the countless ways in which they are employed with telling effect is in the sale of complete fixtures and interior decorating for high-class stores, offices and banks—and in some cases for the exteriors as well. An example of this occurred recently in the experience of a salesman for a concern that plans, designs, furnishes and installs complete bank interiors—and when possible, exteriors also.

Among the recent prospective customers was a banking firm that "warmed up" to the point of considering an expenditure of $6,000 for new interior fixtures. The salesman took measurements, sized up the building in general and, learning that the company had plenty of money available, he laid his plans accordingly.

When he returned to meet the Board of Directors, he had not only perspective views in true color of the fixtures, but color pictures also of proposed new interiors and exterior walls, including a handsome stone front. When he exhibited the exterior pictures, he narrowly escaped being thrown out!

After the storm had subsided—after much discussion and voting—the directors decided to accept the proposal for improving the exterior of the building, the cost to be $16,000, but leaving the interior as it was. A few days later the salesman was notified of the directors' final decision to accept the entire proposition, exterior as well as interior—a $22,000 contract sold through the use of artistic drawings in color.

Motor Car Show

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color, finish and luster by which much of what is useful and beautiful in other lines will be judged, and compared.

Mechanical Polishing

In recent months some discussion has arisen among INDUSTRIAL FINISHING writers and readers as to the practicability and success of mechanically rubbing, to a final high luster polish, the lacquered surfaces of automobile bodies. This subject has aroused marked interest, and this month we are fortunate in being able to present two articles by writers who we believe are fortified with the latest facts, figures, photographs and technical information.

These articles, which probably will be followed by others from time to time, are well worth reading and preserving, not only by those readers who are in the automotive industry, but also by those who are identified with other industries in which finishing and polishing constitute the final phase and touch of the manufacturing process.

To the editor's mind, the most significant fact brought out in these articles is the statement by Mr. Kathju (practical and technical lacquer chemist) that, "to obtain a high-grade and lustrous finish, devoid of whorls, it is imperative that a rich grade of thinner be used for the mist coating." This and several facts about the character and type of equipment to use are of vital importance to industrial finishers, because this information represents what has been learned through long patient experimenting and much costly experience.

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Finisher Recommends a Striping Material

(Continued from page 100)

striper makes a mistake, any of these bronzes can be easily cleaned off with a little pure linseed oil on a wad of cheesecloth, but there is no pyroxylin-base striping material that can be cleaned off either a lacquered or enameled surface, without either leaving a trace of it, or doing some injury to the finish from the effect of the thinner, reducer or solvent.

A splendid quick binder for gold bronze is a spar varnish cut with gasoline; if it dries too fast to stripe satisfactorily, a very little linseed oil may be added. A little experience will teach a practical finisher how to adapt this material to prevailing conditions, such as room temperature, etc.

A 4-hour enamel, used with japan color and reduced with turpentine for striping, may dry too fast to work well; if so, add a little of a slower drying varnish. This can be regulated to your own particular desire and needs.—M. V. Leach.

Referring to J. R. Co's. inquiry under the title "What Striping Material?" (pages 72 and 74, Dec. issue) why you are using drier with japan colors I do not know, as these colors are carefully compounded at the factory, and additional japan drier may retard the drying qualities. It's queer stuff. May I advise that you stir into your plain japan color about two parts of good rubbing varnish to one part japan color (bulk)? Then thin with turpentine only.

Lacquer striping material can be made to dry to suit conditions and requirements, by adding lac-

quer retarder or boiled linseed oil. If you wish to make your stripe more opaque, oil color may be added. The more opaque, the less the gloss. Enamel can be striped with lacquer, but the risk is too great. If a mistake should be made and the stripe must be removed, it may result in the whole job having to be re-enameled. Lacquer acts as a paint remover, and will blister enamel.

I have had irregular success with this material, finding that on some enamels which were thoroughly hardened, it would be satisfactory; then again on other enamels it blistered the enamel, especialy in striping. In using lacquer to stripe with, oil must be added, or the strong lacquer will ruin the brushes.

So it is a case of making your lacquer dry more slowly, whereas the japan and varnish must dry more rapidly. My advice is to use japan colors. Lacquer retarder will take almost, if not as long, to harden as the japan color properly speeded up—Fred Mannhardt.

Referring to the question "What Striping Material?" beginning on page 72 of December issue, one cannot ordinarily use a lacquer striping material over a varnished surface, as it will lift the varnish. A finisher might be able to use a brushing lacquer for this purpose if the undercoat were very hard, as these brushing lacquers do not lift as do ordinary spraying lacquers. Some makes are better adapted for this purpose than others.

There are several good brands of quick-drying enamels on the market today which have a good gloss and covering qualities. You would have to reduce these a little

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for striping, which will shorten the drying time. Some of these enamels dry in from two to four hours.

Or, instead of adding dryer to your japan color, you might reduce your japan with turpentine and add a 4-hour varnish, which will make a fairly good gloss to the stripe.—J. K. Cooper.

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